

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 11-098412

(43)Date of publication of application : 09.04.1999

(51)Int.Cl.	H04N 5/262
	G11B 27/031
	H04N 5/222
	H04N 5/765
	H04N 5/781
	H04N 5/91

(21)Application number : 09-275088

(71)Applicant : SONY CORP

(22)Date of filing : 22.09.1997

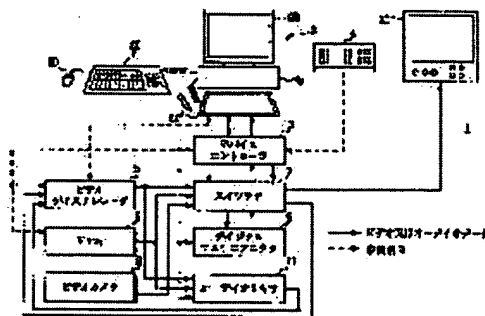
(72)Inventor : MORIWAKE KATSUAKI  
HIRASE HIDEHIRO  
HAMAHATA NARIYASU

**(54) EDIT SYSTEM, DISPLAY DEVICE AND COMPUTER**

(57)Abstract:

**PROBLEM TO BE SOLVED:** To obtain an excellent operation even in the case of conducting edit processing of different kinds by providing an edit means consisting of an edit module, a composite module and a special effect module and displaying a menu according to the graphical user interface for the edit, a composite or special effect processing in the case of editing, compositing or special effect processing.

**SOLUTION:** A work station 2 is started as an edit computer by starting an application software for edit installed in advance on a hard disk drive based on an operating system. In the case of operating the application software, a graphic menu according to the graphical user interface is displayed on a display device 2B. Thus, the number of operations required for the edit is reduced and the operating convenience is enhanced.



## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

## CLAIMS

### [Claim(s)]

[Claim 1] The edit module which therefore generates an edit result clip in the edit system for editing two or more clips for edit to perform edit processing to the above-mentioned clip for edit, The synthetic module which therefore generates an edit result clip to perform synthetic processing to the above-mentioned clip for edit, The edit means which consists of special effect modules which therefore generate an edit result clip to perform special effect processing to the above-mentioned clip for edit, The graphical user interface for edit processing corresponding to the above-mentioned edit module, The graphical user interface for synthetic processing corresponding to the above-mentioned synthetic module, The user interface means which consists of graphical user interfaces for special effect processing corresponding to the above-mentioned special effect module, In performing edit processing to the above-mentioned edit module therefore In displaying the above-mentioned graphical user interface for edit processing on a display and performing edit processing to the above-mentioned synthetic module therefore In displaying the above-mentioned graphical user interface for edit processing on a display and performing edit processing to the above-mentioned edit module therefore The edit system characterized by having a display-control means to display the above-mentioned graphical user interface for edit processing on a display.

[Claim 2] The above-mentioned graphical user interface for edit processing, the above-mentioned graphical user interface for synthetic processing, and the above-mentioned graphical user interface for special effect processing The tree window which displays the clip tree in which the link condition of the above-mentioned clip for edit and the above-mentioned edit result clip is shown, The time-line window for specifying the content of edit given to the above-mentioned clip for edit, The edit system according to claim 1 characterized by having a parameter setting-out window for setting up the image-processing data in which the content of an image processing given to the above-mentioned clip for edit is shown.

[Claim 3] The above-mentioned graphical user interface for edit processing, the above-mentioned graphical user interface for synthetic processing, and the above-mentioned graphical user interface for special effect processing are an edit system according to claim 2 characterized by having further the content display window of edit which reduces the content of edit specified in the above-mentioned time-line window, and is displayed by the graphical image.

[Claim 4] The edit module which therefore generates an edit result clip in the display for editing two or more clips for edit to perform edit processing to the above-mentioned clip for edit, The synthetic module which therefore generates an edit result clip to perform synthetic processing to the above-mentioned clip for edit, The edit means which consists of special effect modules which therefore generate an edit result clip to perform special effect processing to the above-mentioned clip for edit, The graphical user interface for edit processing corresponding to the above-mentioned edit module, The graphical user interface for synthetic processing corresponding to the above-mentioned synthetic module, The user interface means which consists of graphical user interfaces for special effect processing corresponding to the above-mentioned special effect module, In performing edit processing to the above-mentioned edit module therefore In displaying the above-mentioned graphical user interface for edit processing on a display and performing edit processing to the above-mentioned synthetic module therefore In displaying the above-mentioned graphical user interface for edit processing on a display and performing edit processing to the above-mentioned edit module therefore The display characterized by having a display-control means to display the above-mentioned graphical user interface for edit processing on a display.

[Claim 5] The above-mentioned graphical user interface for edit processing, the above-mentioned graphical user interface for synthetic processing, and the above-mentioned graphical user interface for special effect processing The tree window which displays the clip tree in which the link condition of the above-mentioned clip for edit and the above-mentioned edit result clip is shown, The display according to claim 4 characterized by having a time-line window for specifying the content of edit given to the above-mentioned clip for edit, and a parameter setting-out window for setting up the image-processing

data in which the content of an image processing given to the above-mentioned clip for edit is shown.  
[Claim 6] The above-mentioned graphical user interface for edit processing, the above-mentioned graphical user interface for synthetic processing, and the above-mentioned graphical user interface for special effect processing are a display according to claim 5 characterized by having further the content display window of edit which reduces the content of edit specified in the above-mentioned time-line window, and is displayed by the graphical image.

[Claim 7] In the computer apparatus for editing two or more clips for edit The edit module which therefore generates an edit result clip to perform edit processing to the above-mentioned clip for edit, The synthetic module which therefore generates an edit result clip to perform synthetic processing to the above-mentioned clip for edit, The edit means which consists of special effect modules which therefore generate an edit result clip to perform special effect processing to the above-mentioned clip for edit, The graphical user interface for edit processing corresponding to the above-mentioned edit module, The graphical user interface for synthetic processing corresponding to the above-mentioned synthetic module, The user interface means which consists of graphical user interfaces for special effect processing corresponding to the above-mentioned special effect module, In performing edit processing to the above-mentioned edit module therefore In displaying the above-mentioned graphical user interface for edit processing on a display and performing edit processing to the above-mentioned synthetic module therefore In displaying the above-mentioned graphical user interface for edit processing on a display and performing edit processing to the above-mentioned edit module therefore The computer apparatus characterized by having a display-control means to display the above-mentioned graphical user interface for edit processing on a display.

[Claim 8] The above-mentioned graphical user interface for edit processing, the above-mentioned graphical user interface for synthetic processing, and the above-mentioned graphical user interface for special effect processing The tree window which displays the clip tree in which the link condition of the above-mentioned clip for edit and the above-mentioned edit result clip is shown, The time-line window for specifying the content of edit given to the above-mentioned clip for edit, The computer apparatus according to claim 7 characterized by having a parameter setting-out window for setting up the image-processing data in which the content of an image processing given to the above-mentioned clip for edit is shown.

[Claim 9] The above-mentioned graphical user interface for edit processing, the above-mentioned graphical user interface for synthetic processing, and the above-mentioned graphical user interface for special effect processing are a computer apparatus according to claim 8 characterized by having further the content display window of edit which reduces the content of edit specified in the above-mentioned time-line window, and is displayed by the graphical image.

## DETAILED DESCRIPTION

---

[Detailed Description of the Invention]

[0001]

[Table of Contents] This invention is explained in order of the following.

[0002] The whole gestalt (1) edit system configuration of operation of technical-problem The means for solving a technical problem invention which technical field Prior-art invention to which invention belongs tends to solve ( drawing 1 )

(2) The configuration of a workstation ( drawing 2 )

(3) The basic configuration of the application software for principle (3-1) edit of the edit in an edit system ( drawing 3 )

(3-2) The definition of a clip ( drawing 4 )

(3-3) The principle of synthetic processing ( drawing 5 - drawing 7 )

(3-4) The principle of special effect processing ( drawing 8 )

(3-5) The principle of edit processing ( drawing 9 )

(4) GUI when starting the graphical display (4-1) composition module displayed as GUI ( drawing 10 )

(4-2) GUI when starting a special effect module ( drawing 11 )

(4-3) GUI when starting an edit module ( drawing 12 )

(5) The management method of the clip management data in a clip database ( drawing 13 - drawing 20 )

(6) Various procedure in an edit system ( drawing 21 - drawing 29 )

(7) Actuation and the effectiveness effect of the invention [0003] of an edit system

[Field of the Invention] This invention is applied to the edit system which performs edit processing in an edit system and a display list especially about a computer apparatus using two or more raw materials, and is suitable.

[0004]

[Description of the Prior Art] In recent years, in the field of the postproduction which edits the video data obtained from the video camera, the non-linear-editing system which used the disk as a record medium which records the data of a raw material is proposed. Edit processing of various classes exists as edit processing performed in this non-linear-editing system. For example, the video edit processing for connecting two or more raw materials and creating a desired video program, the synthetic processing for therefore compounding two or more raw materials to a keying signal, the special effect processing that performs special effect processing to a raw material exist. Generally, this video edit processing is performed by edit equipment, synthetic processing is performed by the video switcher, and special effect processing is performed in special effect equipment.

[0005] Intermediary \*\*\*\* [ as ] as which the edit processing which access becomes possible simultaneously to two or more channels, consequently therefore processes the video data of two or more channels on real time to improvement in the random access nature of a disk-like record medium in recent years is requested. For example, in the edit industry for TV commercial creation, or the edit industry for film programmings, while performing edit processing using hundreds of [ dozens to ] raw materials, to use it combining edit processing of a different class is demanded. Furthermore, intermediary \*\*\*\* [ as ] as which generating complicated advanced and edit result data therefore repeating repeatedly two or more kinds of these edit processings, and performing them is required.

[0006]

[Problem(s) to be Solved by the Invention] By the way, while carrying out edit processing of two or more raw materials in this way, when using it combining edit processing of a different class, as a user interface offered to an operator, what it is easy to use is desired on operability.

[0007] This invention was made in consideration of the above point, and even when it enables it to perform edit processing of a different class, it tends to propose a computer apparatus in the edit system and display list which can offer the outstanding operability.

[0008]

[Means for Solving the Problem] In order to solve this technical problem, it sets to this invention. The edit module which therefore generates an edit result clip in the edit system for editing two or more clips for edit to perform edit processing to the clip for edit, The synthetic module which therefore generates an edit result clip to perform synthetic processing to the clip for edit, The edit means which consists of special effect modules which therefore generate an edit result clip to perform special effect processing to the clip for edit, The graphical user interface for edit processing corresponding to an edit module, The graphical user interface for synthetic processing corresponding to a synthetic module, The user interface means which consists of graphical user interfaces for special effect processing corresponding to a special effect module, In performing edit processing to an edit module therefore In displaying the graphical user interface for edit processing on a display and performing edit processing to a synthetic module therefore In displaying the graphical user interface for edit processing on a display and performing edit processing to an edit module therefore, it establishes a display-control means to display the graphical user interface for edit processing on a display.

[0009] Moreover, in this invention, it sets to the display for editing two or more clips for edit. The edit module which therefore generates an edit result clip to perform edit processing to the clip for edit, The synthetic module which therefore generates an edit result clip to perform synthetic processing to the clip for edit, The edit means which consists of special effect modules which therefore generate an edit result clip to perform special effect processing to the clip for edit, The graphical user interface for edit processing corresponding to an edit module, The graphical user interface for synthetic processing corresponding to a synthetic module, The user interface means which consists of graphical user interfaces for special effect processing corresponding to a special effect module, In performing edit processing to an edit module therefore In displaying the graphical user interface for edit processing on a display and performing edit processing to a synthetic module therefore In displaying the graphical user interface for edit processing on a display and performing edit processing to an edit module therefore, it establishes a display-control means to display the graphical user interface for edit processing on a display.

[0010] Moreover, in this invention, it sets to the computer apparatus for editing two or more clips for edit. The edit module which therefore generates an edit result clip to perform edit processing to the clip for edit, The synthetic module which therefore generates an edit result clip to perform synthetic processing to the clip for edit, The edit means which consists of special effect modules which therefore generate an edit result clip to perform special effect processing to the clip for edit, The graphical user interface for edit processing corresponding to an edit module, The graphical user interface for synthetic processing corresponding to a synthetic module, The user interface means which consists of graphical user interfaces for special effect processing corresponding to a special effect module, In performing edit processing to an edit module therefore In displaying the graphical user interface for edit processing on a display and performing edit processing to a synthetic module therefore In displaying the graphical user interface for edit processing on a display and performing edit processing to an edit module therefore, it establishes a display-control means to display the graphical user interface for edit processing on a display.

[0011] thus, the thing for which the graphical user interface of a corresponding processing module was displayed on the display when dividing a processing module according to the content of edit given to the clip for edit and performing an editing task using each processing module -- an edit operator -- \*\* -- an intermediary -- an intelligible user interface can be offered and the outstanding operability can be realized. When it enables it to perform different edit processing incidentally, and they are made to serve a double purpose by one user interface and are operated, there is a possibility that actuation may become complicated, but like this invention, by one user interface, if \*\*\*\*\* also divides the content of a display for every module, the outstanding operability is physically realizable.

[0012]

[Embodiment of the Invention] About a drawing, the gestalt of 1 operation of this invention is explained in full detail below.

[0013] (1) the whole edit system \*\*\*\* -- explain the whole edit system configuration by this invention

using introduction drawing 1 first. In drawing 1, 1 showed the edit system by this invention as a whole, and is equipped with the workstation 2 which controls the whole system concerned. This workstation 2 has body 2A equipped with CPU (central-process unit), various processing circuits or a floppy disk drive, a hard disk drive, etc., and display 2B [ which is connected to the body 2A concerned ], keyboard 2C, mouse 2D, and pen tablet 2E. The application software for edit is beforehand installed in the hard disk drive, and such a workstation 2 is made as [ start / as a computer for edit ] by operating the application software concerned by the radical of an operating system.

[0014] When operating this application software incidentally, it is made as [ display / on display 2B / the graphical display for GUI (graphical user interface) ], and pen tablet 2E and mouse 2D which were mentioned above are used, and if the graphical display of the request displayed on the display 2B concerned is chosen, it is made as [ input / a desired editing command / to this workstation 2 ]. Moreover, it is made as [ input / through keyboard 2C / the various numeric data concerning edit etc. / to this workstation 2 ].

[0015] In addition, if an editing command and various numeric data are inputted by actuation of an operator, this workstation 2 is made as [ output / to the device controller 3 which mentions the control data according to those editing command and various numeric data later ], and is made as [ control / each device which constitutes this edit system 1 through a device controller 3 by this ]. However, about the video disc recorder 5, it is made as [ control / \*\* / without a device controller 3 / directly / a part of functions ].

[0016] Moreover, it is made as [ input / through that device controller 3 / into this workstation 2 / a video data ], and is made as [ display / on display 2B / the image of an edit raw material, the image after edit, etc. ].

[0017] A device controller 3 is a control unit which controls each device actually in response to the control data from a workstation 2. To this device controller 3, the exclusive controller 4 with a dial handler, a slide handler, etc. is connected, and, thereby, it is made by this edit system 1 as [ input / control data which cannot be inputted and which changes gradually ] by keyboard 2C [ of a workstation 2 ], mouse 2D, or pen tablet 2E.

[0018] This device controller 3 receives the control data from a workstation 2 or the exclusive controller 4, and controls the device corresponding to that control data. For example, to a video disc recorder 5, a device controller 3 directs playback of a raw material, and record of the raw material after edit. The video data and audio data of a request raw material with which the carrier beam video disc recorder 5 is recorded on the internal disk-like record medium according to those directions in these directions are reproduced and outputted, or the video data and audio data which were edited are recorded on the disk-like record medium concerned.

[0019] Similarly, a device controller 3 directs playback of a raw material also to a video tape recorder (VTR) 6. The video data and audio data of a request raw material with which the carrier beam video tape recorder 6 is recorded on the internal video tape according to those directions in these directions are reproduced and outputted. In addition, in the case of this edit system 1, the video data currently recorded on the video tape recorder 6 is treated as a video data of a raw material, once it downloads to a video disc recorder 5.

[0020] Moreover, to a switcher 7, a device controller 3 directs selection of the video data outputted from a video disc recorder 5, a video tape recorder 6, or a video camera 8. The video data of the request raw material by which these directions are inputted into the carrier beam switcher 7 according to those directions is chosen. Output to the digital multi-effector 9, or A device controller 3 is minded. Output to a workstation 2 or Or make sequential selection, and connect the video data of the request raw material inputted, the edited video data is outputted and displayed on a monitor 10, or the edited video data is made to return and record on a video disc recorder 5.

[0021] Moreover, to the digital multi-effector 9, a device controller 3 directs various effect processings. It is made as [ output / to a workstation 2, a monitor 10, or video disc recorder 5 grade / to the video data of the request raw material by which these directions are inputted into the carrier beam digital multi-effector 9 according to those directions, perform effect processing of special effect processing of mosaic

processing, three dimension image transformation processing, etc., a transition effect, etc., or image composition processing, return again the video data obtained as a result to a switcher 7, and ].

[0022] Moreover, to the audio mixer 11, a device controller 3 directs edit of the audio data outputted from a video disc recorder 5 or a video tape recorder 6. The carrier beam audio mixer 11 carries out synthetic processing (mixing) of the desired audio raw material for these directions according to those directions, and that audio data by which synthetic processing was carried out is made to return and record on a video disc recorder 5 again.

[0023] In the edit system 1 which has such a configuration in this way, by inputting a desired editing command through a workstation 2, the video data of two or more of a variety of raw materials currently recorded on the video disc recorder 5 or the video tape recorder 6 is used, and it is made as [ create / the video data of a complicated advanced and request / easily ]. Even if an operator does not do by this the direct control of each device which constitutes an edit system like before, while being able to perform various edits only by operating a workstation 2 and being able to reduce the actuation concerning edit as compared with the former, the user-friendliness of an edit system can be improved.

[0024] (2) \*\*\*\* of a workstation -- this term explains the configuration of the workstation 2 which is central existence of the edit system 1. As shown in drawing 2, a workstation 2 As opposed to CPU21 which controls the system bus 20 for transmitting command data and a video data, and the whole workstation 2, and the video data S1 supplied from a device controller 3 An image processing etc. The HDD interface 24 for controlling the display controller 23 and local hard disk drive (local HDD) 24A which manage the graphical display for the video processor 22 to perform, the video data displayed on display 2B, or GUI, The FDD interface 25 for controlling floppy disk drive (FDD) 25A, keyboard 2C, As opposed to the pointing device interface 26 and device controller 3 which generate control command based on the command from pointing devices, such as mouse 2D and pen tablet 2E It has the external interface 27 equipped with the software driver for sending out control data S2.

[0025] A system bus 20 is a bus for transmitting a video data, command data or address data, etc. in the workstation 2 interior, and consists of image data bus 20A for transmitting a video data, and command data bus 20B for transmitting command data and address data.

[0026] CPU21, the video processor 22, the display controller 23, the HDD interface 24, and the FDD interface 25 are connected to image data bus 20A, respectively, and CPU21 concerned, the video processor 22, the display controller 23, the HDD interface 24, and the FDD interface 25 are made as [ transmit / through this image data bus 20A / a video data ].

[0027] On the other hand, CPU21, the video processor 22, the display controller 23, the HDD interface 24, the FDD interface 25, the pointing device interface 26, and the external interface 27 are connected to command data bus 20B, respectively (that is, all blocks of the workstation 2 interior are connected), and it is made as [ perform / through the command data bus 20B concerned / transmission of command data or address data ].

[0028] CPU21 is a block which controls the workstation 2 whole, and has ROM21A in which the operating system of a workstation 2 is stored, and RAM21B in which the uploaded application software, a database, etc. are stored. When starting a workstation 2, CPU21 is made as [ start / by operating based on the operating system memorized by ROM21A ]. Moreover, when starting application software under the operating system under this starting, CPU21 reads the application software currently first recorded on the hard disk of hard disk drive 24A, uploads it to RAM21B, and is made as [ start / after that / the application software concerned / perform and ].

[0029] in addition, the modularization of the application software is divided and carried out for every function, and it is mentioned later -- as -- large -- dividing -- a raw material -- connecting -- etc. -- with the edit module for carrying out The synthetic module for performing \*\*\*\*\* processing when with the superposition of a raw material etc., Therefore, it is constituted by the special effect module for performing \*\*\*\*\* processing when with the three-dimension-image transformation of a raw material etc., and the control module which manages starting of these modules, carrier delivery of the data of an inter module, etc. That is, the module (an edit module, a synthetic module, or special effect module) which in the case of this system corresponds under management of that control module if a

control module starts first and edit directions are inputted by the operator when application software is started is started suitably, and it is made as [ perform / edit directed by the operator ].

[0030] The video processor 22 is the block for buffering the changed video data temporarily while performing data conversion for the video data S1 of SDI (SerialDigital Interface) specification inputted into a workstation 2 to reception and the video data S1 concerned. specifically, the video processor 22 should resemble frame memory 22C which memorizes temporarily the video data for several frames sent out from data-conversion section 22B which extracts a composite video signal from processor controller 22A which controls the whole video processor 22 concerned, and the pay-load section of the receptacle \*\*\*\*\* video data S1, and changes the composite video signal concerned into a digital component video data, and data-conversion section 22B -- intermediary \*\*\*\* -- last \*\*

[0031] Processor controller 22A makes the data-conversion section 22B concerned extract a time code from a video data S1 while controlling data-conversion actuation of the data-conversion section 22B concerned by sending out a control signal to data-conversion section 22B. Moreover, processor controller 22A controls the read/write timing and the read/write address of the frame memory 22C concerned by sending out a control signal to frame memory 22C. Incidentally, about lead timing, processor controller 22A controls the lead timing of frame memory 22C so that the time code and video data (frame data) which are sent out to the display controller 23 correspond.

[0032] Data-conversion section 22B changes a composite video signal into a digital component video data based on the control signal from processor controller 22A. Incidentally, a time code is extracted in this conversion process. The time code which was sent out to frame memory 22C, and was extracted as the video data obtained by this conversion was mentioned above is sent out to processor controller 22A.

[0033] Frame memory 22C memorizes temporarily the video data supplied from data-conversion section 22B. Therefore, the read/write timing of this frame memory 22C is controlled by processor controller 22A, as mentioned above. This frame memory 22C consists of at least two frame memories, and is made as [ memorize / the video data for at least two frames ].

[0034] processor controller 22A carries out reading appearance of the video data memorized by this frame memory 22C, and reading appearance is carried out based on control. Image size is made smaller than a subject-copy image by not being that of all pixel reading \*\*\*\*, thinning out the video data memorized by frame memory 22C at the predetermined spacing, and reading in that case. Thus, since the video data from which image size was changed small is displayed on the predetermined display area of display 2B as an object for the check of a raw material or an edit result, it is sent out to the display controller 23 through image data bus 20A.

[0035] The display controller 23 is control block for controlling the data displayed on display 2B. The display controller 23 has memory controller 23A and VRAM(video random access memory)23B. memory controller 23A -- the internal synchronization of a workstation 2 -- therefore, the read/write timing of VRAM23B is controlled. The image data therefore generated by the video data and CPU21 which were sent out from frame memory 22C of the video processor 22 is memorized by this VRAM23B based on the timing-control signal from memory controller 23A. Based on the timing-control signal from memory controller 23A based on the internal synchronization of a workstation 2, reading appearance of the video data and image data which were memorized by this VRAM23B is carried out, and they are displayed on display 2B.

[0036] In this case, the graphical display by the image data turns into graphical display for GUI. Incidentally, they are image datas, such as an icon a sending-out \*\*\*\* image data indicates a window, cursor or a scroll bar, and a device to be to VRAM23B from CPU21.

[0037] It is made in this way as [ display / on the display 2B concerned / GUI for operator actuation, or the image of a raw material or an edit result ] by displaying these image datas and video datas on display 2B in this workstation 2.

[0038] The HDD interface 24 is the interface block for communicating with local hard disk drive 24A prepared in the workstation 2 interior. This HDD interface 24 and hard disk drive 24A are made as [ perform / based on a SCSI (Small Computer System Interface) transmission format / a communication link ].

[0039] In installing in hard disk drive 24A the application software which starts by this workstation 2 and performing the application software concerned, reading appearance is carried out from this hard disk drive 24A, and it uploads to RAM21B of CPU21. Moreover, in case this application software is ended, the various information (for example, information on the database about an edit raw material etc.) therefore generated by the edit operation memorized by RAM21B is downloaded to a hard disk through this hard disk drive 24A.

[0040] The FDD interface 25 is the interface block for communicating with floppy disk drive 25A prepared in the workstation 2 interior. This FDD interface 25 and floppy disk drive 25A are made as [ perform / based on a SCSI transmission format / a communication link ].

[0041] The pointing device interface 26 is an interface block which receives the information from keyboard 2C [ which was connected to the workstation 2 ], mouse 2D, and pen tablet 2E. The pointing device interface 26 decodes reception and receptacle \*\*\*\*\* input, and sends out the input from a carbon button prepared in keyboard 2C to CPU21. the detection information on the two-dimensional rotary encoder with which similarly the pointing device interface 26 was formed in mouse 2D, and the click information on a carbon button on either side (namely, selection assignment information by the carbon button depression) prepared in mouse 2D -- the reception from the mouse 2D concerned, and receptacle \*\*\*\*\* -- the information on them is decoded and it sends out to CPU21. Similarly, the pointing device interface 26 decodes reception and the location data of receptacle \*\*\*\*\*, and sends out the two-dimensional location data of pen tablet 2E to CPU21. While being able to recognize whether which command carbon button was directed among GUI as which CPU21 is displayed on display 2B based on the information from such a pointing device interface 26, the various data inputted from keyboard 2C can be recognized, and control corresponding to them can be performed.

[0042] An external interface 27 is the block for communicating with the device controller 3 connected to the exterior of a workstation 2. The external interface 27 has the driver which changes into the data of a predetermined communications protocol various control command generated by CPU21, such as a playback command and a record command, and sends out the control command data S2 to a device controller 3 through the driver concerned.

[0043] (3) \*\*\*\* of the edit in an edit system -- this term explains order later on below about the principle of the edit in the edit system 1.

[0044] (3-1) basic \*\*\*\* of the application software for edit -- explain the basic configuration of the application software for edit currently prepared in the workstation 2 by this term for beginning first. As shown in drawing 3 , in this edit system 1, the application software for edit by which the modularization was carried out for every function is prepared for the workstation 2. This application software by which a modularization was carried out roughly divides, and, therefore, is constituted by control-module CNTM manage starting of an edit module EM, a synthetic module CM, and a special-effect module SM by which a modularization was carried out to the edit module EM which a raw material connects and performs edit processing of processing etc., the synthetic module CM which performs synthetic processing of superposition processing of a raw material etc., and the special-effect module SM which perform the special-effect processing to a raw material for every functions of these. The application software which has such a configuration is made as [ start / according to the directions from an operator / each modules EM, CM, and SM / under management of the control-module CNTM / control-module CNTM starts first and /, respectively / suitably ], if it uploads from hard disk drive 24A to RAM21B.

[0045] Therefore the clip database CDB was constituted by a video disc recorder 5 and RAM21B, and has memorized the video data of a raw material, and the various data about edit. Each modules EM, CM, and SM read the raw material specified by the operator from the clip database CDB, using the hardware of the switcher 7 mentioned above or digital multi-effector 9 grade, perform edit according to directions of an operator to the raw material, and register into the clip database CDB the raw material after [ which is obtained as a result ] being edited. Moreover, each modules EM, CM, and SM also register into the clip database CDB the data about edits, such as various parameters used for edit. In addition, it is made as [ memorize / as a clip database CDB, / mainly memorize the video data of a raw material to a video

disc recorder 5, and / to RAM21B / the various data about edit ].

[0046] (3-2) By the edit system 1 by definition this invention of a clip, each raw material is treated in the unit called a clip. This term defines this clip. In the edit system 1 by this invention, one sequence of a video video data is defined as a clip video data, how the clip video data's being generated and the data to manage are defined as clip management data in it, and the data which consist of these clip video datas and clip management data further are defined as a clip in it. Moreover, in the edit system 1 by this invention, the raw material generated by editing a raw material clip (MC), and a call and its raw material clip in the raw material generated by only starting from a source video data is called a result clip (FC).

[0047] In the edit system 1 by this invention, it is made as [ manage / a raw material clip or two or more clips which consist of a clip a result / to the layered structure based on the relation during a clip / therefore ]. It explains below, referring to the example which shows this situation to drawing 4 .

[0048] In the example shown in drawing 4 , result clip FC-008 are the clip therefore generated by compounding three raw material clips, raw material clip MC-001, raw material clip MC-002, and raw material clip MC-003. namely, a result -- the relation between clip FC-008, and raw material clip MC-001, raw material clip MC-002 and raw material clip MC-003 -- up Shimonoseki charge -- intermediary \*\*\*\*. When such up Shimonoseki charge has, raw material clip MC-001, raw material clip MC-002, and raw material clip MC-003 are called a low order clip from the subordinate of result clip FC-008 having, respectively, and since result clip FC-008 generalize these low order clip conversely and are generated, they are called a high order clip to it.

[0049] Similarly, result clip FC-009 are the clip therefore generated by giving special effect to raw material clip MC-004. For this reason, raw material clip MC-004 become the low order clip of result clip FC-009, and result clip FC-009 become the high order clip of raw material clip MC-004 at reverse.

[0050] Moreover, result clip FC-010 are a clip as a result of being generated therefore by what (it therefore connects to wipe etc. in this case) clip FC-009 are edited for result clip FC-008 and a result. for this reason, a result -- clip FC-008 and a result -- clip FC-009 -- respectively -- a result -- the low order clip of clip FC-010 -- becoming -- a result -- clip FC-010 -- a result -- clip FC- it becomes the high order clip of clip FC-009 008 and a result.

[0051] Thus, up Shimonoseki charge is between each clip, and it is made in this edit system 1 as [ manage / based on the up Shimonoseki charge during this clip / in the clip database CDB / by the layered structure / the clip concerned ]. In addition, although the raw material clip which is not used for edit processing at all does not have \*\*\*\*\* with regards to other clips, such a raw material clip is managed as a thing without a link place. Moreover, naturally as for the example shown here, other combination also exists as up Shimonoseki charge during a \*\*\*\*\* clip for example to the last.

[0052] (3-3) The principle, then this term of synthetic processing explain the principle of the synthetic processing performed by the synthetic module CM. As a result of being shown in drawing 4 , therefore, the video image of clip FC-008 is generated by carrying out synthetic processing (namely, composite processing) of the video image of raw material clip MC-001, raw material clip MC-002, and raw material clip MC-003. The principle of this synthetic processing is shown in drawing 5 and drawing 6 . Drawing 5 shows signs that three video images, raw material clip MC-001, MC-002, and MC-003, are compounded, and drawing 6 expresses the video image of clip FC-008, as a result of being generated by synthetic processing therefore.

[0053] In the edit system 1 by this invention, when compounding two or more clips, it considers that each clip is one layer (namely, layer), and is made as [ perform / synthetic processing ] by piling up the layer. In the example shown in drawing 5 , raw material clip MC-003 were specified as the 1st layer L1, raw material clip MC-002 were specified as the 2nd layer L2, and raw material clip MC-001 are specified as the 3rd layer L3. When compounding the raw material clip assigned to each layers L1, L2, and L3, it is carried out by going each layers L2 and L3 in piles one by one on it by using a layer L1 as the lowest layer. Namely, after the video image (for example, image showing a background) of raw material clip MC-003 specified as the 1st layer L1 The video image (for example, image showing a person) of raw material clip MC-002 specified as the 2nd layer L2 is piled up and compounded. The video image (for example, image showing a character) of raw material clip MC-001 furthermore

specified as the 3rd layer L3 after the compound video image is piled up and compounded. three raw materials as shown in drawing 6 by such synthetic processing -- lapping -- \*\*\*\*\* -- clip FC-008 are generable as a result of a video image [ like ].

[0054] In addition, although the example shown in this drawing 5 showed the example which compounds raw material clip MC-003 assigned to three layers L1-L3, respectively, MC-002, and MC-001 In the edit system 1 by this invention, it is made as [ compound / from the intermediary cage / as / and the 1st layer L1 which can secure ten layers at the maximum / ten raw material clips assigned to the 10th layer L10, respectively ]. Incidentally, in this case, the 1st layer L1 turns into a layer of the lowest layer, and the 10th layer L10 with the largest layer number turns into a layer of the maximum upper layer.

[0055] Next, with reference to drawing 7 , this synthetic processing is explained in more detail. Drawing 7 makes the direction of an axis of abscissa time amount, and signs that result clip FC-008 are generated by synthetic processing with raw material clip MC-003 specified as the 1st layer L1, raw material clip MC-002 which were specified as the 2nd layer L2, and raw material clip MC-001 which were specified as the 3rd layer L3 are shown. As shown in this drawing 7 , in result clip FC-008, the 8th editing point EP 8 is set up from the 1st editing point EP 1 as the modification point of each parameter, such as the edit start point (this is hereafter called the Inn point) and the point (this is hereafter called the out point) ending [ edit ] of each raw material clip, and composition or image transformation.

[0056] The 1st editing point EP 1 shows the Inn point IN3 of raw material clip MC-003, the 2nd editing point EP 2 shows the Inn point IN2 of raw material clip MC-002, and the 4th editing point EP 4 shows the Inn point IN1 of raw material clip MC-001. Moreover, the 6th editing point EP 6 shows the out point OUT2 of raw material clip MC-002, the 7th editing point EP 7 shows the out point OUT1 of raw material clip MC-001, and the 8th editing point EP 8 shows the out point OUT3 of raw material clip MC-003. In addition, the 3rd editing point EP 3 and the 5th editing point EP 5 are editing points set up in order to change the synthetic parameter of each layer. About these editing points EP3 and EP5, it mentions later for details.

[0057] Each clip has the original internal time code which begins from the head location of the video data of each clip, as shown in drawing 7 . For example, raw material clip MC-003 specified as the 1st layer L1 have the internal time line t3 started from the head location S3 of the video data. Raw material clip MC-002 specified as the 2nd layer L2 have the internal time line t2 started from the head location S2 of the video data. Raw material clip MC-001 specified as the 3rd layer L3 have the internal time line t1 started from the head location S1 of the video data.

[0058] the same -- a result -- a clip -- FC - 008 -- the -- a video data -- a head -- a location -- S -- eight -- from -- starting -- the interior -- the time line -- t -- eight -- having -- \*\*\*\* -- having mentioned above -- the -- one -- edit -- a point -- EP -- one -- from -- the -- eight -- edit -- a point -- EP -- eight -- a time code -- respectively -- a result -- a clip -- FC - 008 -- the time line -- t -- eight -- a top -- a time code -- therefore -- a definition -- carrying out -- having -- \*\*\*\* .

[0059] For the Inn point IN3 and the out point OUT3 of raw material clip MC-003, therefore, it is defined as the time line t3 of raw material clip MC-003, respectively, and these time codes are "00:00:31:02" and "00:05:18:02", and intermediary \*\*\*\*, respectively. therefore, the time code of this Inn point IN3 -- a result -- clip FC- the time code "00:00:00:00" of the 1st editing point EP 1 in 008 -- corresponding -- the time code of the out point OUT3 -- a result -- clip FC- the time code "00:04:47:00" of the 8th editing point EP 8 in 008 is supported.

[0060] Similarly, for the Inn point IN2 and the out point OUT2 of raw material clip MC-002, therefore, it is defined as the time line t2 of raw material clip MC-002, respectively, and these time codes are "00:00:51:00" and "00:03:04:20", and intermediary \*\*\*\*, respectively. therefore, the time code of this Inn point IN2 -- a result -- clip FC- the time code "00:00:42:20" of the 2nd editing point EP 2 in 008 -- corresponding -- the time code of the out point OUT2 -- a result -- clip FC- the time code "00:02:59:20" of the 6th editing point EP 6 in 008 is supported.

[0061] Similarly, for the Inn point IN1 and the out point OUT1 of raw material clip MC-001, therefore, it is defined as the time line t1 of raw material clip MC-001, respectively, and these time codes are

"00:01:40:03" and "00:02:45:48", and intermediary \*\*\*\*, respectively. therefore, the time code of this Inn point IN1 -- a result -- clip FC- the time code "00:01:56:00" of the 4th editing point EP 4 in 008 -- corresponding -- the time code of the out point OUT1 -- a result -- clip FC- the time code "00:03:19:45" of the 7th editing point EP 7 in 008 is supported.

[0062] When result clip FC-008 are reproduced, therefore, in the period from the 1st editing point EP 1 to the 2nd editing point EP 2 The video image of raw material clip MC-003 is outputted. In the period from the 2nd editing point EP 2 to the 4th editing point EP 4 The video image by which raw material clip MC-002 were compounded is outputted on raw material clip MC-003. In the period from the 4th editing point EP 4 to the 6th editing point EP 6 The video image by which raw material clip MC-002 and raw material clip MC-001 were compounded is outputted on raw material clip MC-003. In the period from the 6th editing point EP 6 to the 7th editing point EP 7 On raw material clip MC-003, the video image by which raw material clip MC-001 were compounded will be outputted, and the video image of raw material clip MC-003 will be outputted in the period from the 7th editing point EP 7 to the 8th editing point EP 8.

[0063] In addition, the synthetic processing explained here is an example to the last, and, naturally other combination also exists as combination of the clip by which synthetic processing is carried out.

[0064] (3-4) The principle, then this term of special effect processing explain the principle of the special effect processing performed by the special effect module SM. As a result of being shown in drawing 4, clip FC-009 are the clip generated by performing special effect processing to raw material clip MC-004. Here, in order to give explanation intelligible, the principle of special effect processing is explained to raw material clip MC-004 using drawing 8 as what performs the mosaic effectiveness, the crop effectiveness, three-dimension image transformation, and four special effect processings of the trail effectiveness.

[0065] As shown in drawing 8, in this example, to raw material clip MC-004, the mosaic effectiveness is specified as the 1st special effect E1, the crop effectiveness is specified as the 2nd special effect E2, three-dimension image transformation is specified as the 3rd special effect E3, and the trail effectiveness is specified as the 4th special effect E4.

[0066] In this case, the mosaic effectiveness is effectiveness which divides a video image into a tile-like wafer and shows it like mosaic drawing. Intermediary \*\*\*\* [ as ] which is made as [ set / as any value / the parameter about this mosaic effectiveness ] in the edit system 1 by this invention, and can set the magnitude and the aspect ratio of a wafer of the shape of this tile as any value by this.

[0067] The crop effectiveness is effectiveness which therefore starts a part of video image to make a picture frame small, and it starts from starting a part of video image, and is also called effectiveness. They are a top chord and a lower side location, and intermediary \*\*\*\* [ as ] that can set the shading-off condition of an edge as arbitration further to the right-hand side of a picture frame and a left part location, and a list by the intermediary cage [ as ] and this which can set the parameter about this crop effectiveness as any value in the edit system 1 by this invention.

[0068] Three-dimension image transformation (3-Dimensional Transform) is effectiveness which changes an image virtually on three-dimension space. For example, if the X-axis was defined for the horizontal direction of an image and the Y-axis and the depth direction were perpendicularly defined as the Z-axis, it is the thing of image transformation which rotates an image or moves an image to the X-axis, a Y-axis, or Z shaft orientations by setting a revolving shaft as the X-axis concerned, a Y-axis, or the Z-axis. The intermediary cage [ as ] which can set the parameter about this three-dimension image transformation as any value in the edit system 1 by this invention, intermediary \*\*\*\* [ as ] which can perform image transformation of arbitration by this.

[0069] The trail effectiveness is effectiveness which freezes an image as a still picture at intervals of predetermined, and leaves the frozen image as an after-image image in case an image is moved spatially, and, generally it is also called the recursive call effectiveness. Intermediary \*\*\*\* [ as ] which can set as arbitration the period which it leaves in the edit system 1 by this invention as the intermediary cage [ as ] which can set the parameter about this trail effectiveness as any value, spacing which freezes an image by this, and an after-image.

[0070] Moreover, also in this special effect processing, as shown in this drawing 8 R> 8, in result clip FC-009, the 7th editing point EP 7 is set up from the 1st editing point EP 1 as the edit start point (Inn point) and the point (out point) ending [ edit ] of a raw material clip, and the parameter modification point of image transformation.

[0071] The 1st editing point EP 1 shows the Inn point IN4 of raw material clip MC-004, the start point of the mosaic effectiveness, and the start point of the crop effectiveness. The 2nd editing point EP 2 shows the start point of three-dimension image transformation, and the 4th editing point EP 4 shows the start point of the trail effectiveness. The 7th editing point EP 7 shows the out point OUT4 of raw material clip MC-004, the ending point of the mosaic effectiveness, the ending point of the crop effectiveness, the ending point of three-dimension image transformation, and the ending point of the trail effectiveness. In addition, the 3rd editing point EP 3, the 5th editing point EP 5, and the 6th editing point EP 6 are editing points set up in order to change the conversion parameter of three-dimension image transformation. About these editing points EP3, EP5, and EP6, it mentions later for details.

[0072] Like [ in special effect ] the case of synthetic processing, clip FC-009 have the internal time line t4 and t9 therefore expressed by the original internal time code started from the head location of the video data of each clip, respectively raw material clip MC-004 and a result, and, therefore, the definition of the time code of the 7th editing point EP 7 is carried out to the time code on the result clip FC-time line t9 of 009 from the 1st editing point EP 1 mentioned above.

[0073] For the Inn point IN4 and the out point OUT4 of raw material clip MC-004, therefore, it is defined as the time line t4 of raw material clip MC-004, respectively, and these time codes are "00:10:12:00" and "00:12:18:00", and intermediary \*\*\*\*, respectively. therefore, the time code of this Inn point IN4 -- a result -- clip FC- the time code "00:00:00:00" of the 1st editing point EP 1 in 009 -- corresponding -- the time code of the out point OUT4 -- a result -- clip FC- the time code "00:02:06:00" of the 7th editing point EP 7 in 009 is supported.

[0074] moreover, the initiation point of the mosaic effectiveness specified as the 1st special effect E1 is shown in drawing 8 -- as -- a result -- clip FC- the 1st editing point EP 1 that the time code in 009 is set to "00:00:00:00" -- the termination point of an intermediary cage and the mosaic effectiveness -- a result -- clip FC- the 7th editing point EP 7 that the time code in 009 is set to "00:02:06:00" -- intermediary \*\*\*\*.

[0075] Similarly the initiation point of the crop effectiveness specified as the 2nd special effect E2 it is shown in drawing 8 -- as -- a result -- clip FC- the 1st editing point EP 1 that the time code in 009 is set to ""00:00:00:00" -- the termination point of an intermediary cage and the crop effectiveness a result -- clip FC- the 7th editing point EP 7 that the time code in 009 is set to "00:02:06:00" -- intermediary \*\*\*\*.

[0076] moreover, the initiation point of the three-dimension image transformation specified as the 3rd special effect E3 -- a result -- clip FC- the 2nd editing point EP 2 that the time code in 009 is set to "00:00:12:03" -- the termination point of an intermediary cage and three-dimension image transformation -- a result -- clip FC- the 7th editing point EP 7 that the time code in 009 is set to "00:02:06:00" -- intermediary \*\*\*\*.

[0077] moreover, the initiation point of the trail effectiveness specified as the 4th special effect E4 -- a result -- clip FC- the 4th editing point EP 4 that the time code in 009 is set to "00:01:02:50" -- the termination point of an intermediary cage and the trail effectiveness -- a result -- clip FC- the 7th editing point EP 7 that the time code in 009 is set to "00:02:06:00" -- intermediary \*\*\*\*.

[0078] When result clip FC-009 are reproduced, therefore, in the period from the 1st editing point EP 1 to the 2nd editing point EP 2 The video image to which the mosaic effectiveness and the crop effectiveness were given is outputted to the video image of raw material clip MC-004. In the period from the 2nd editing point EP 2 to the 4th editing point EP 4 The video image to which the mosaic effectiveness, the crop effectiveness, and three-dimension image transformation were performed is outputted to the video image of raw material clip MC-004. In the period from the 4th editing point EP 4 to the 7th editing point EP 7, the video image to which the mosaic effectiveness, the crop effectiveness, three-dimension image transformation, and the trail effectiveness were given will be outputted to the

video image of raw material clip MC-004.

[0079] (3-5) The principle, then this term of edit processing explain the principle of the edit processing performed by the edit module EM. As a result of being shown in drawing 4 , clip FC-010 are the clip therefore generated by carrying out edit processing of clip FC-009 result clip FC-008 and a result. Here, in order to give explanation intelligible, the principle of edit processing is explained to the wipe effectiveness as what therefore performs edit processing using drawing 9 .

[0080] As shown in drawing 9 , while result clip FC-008 are specified as the 1st layer L1, in this example, result clip FC-009 are specified as the 2nd layer L2. Moreover, the wipe effectiveness is specified as change-over processing at the time of switching to clip FC-009, as a result of being specified as the 1st layer L1 and specified as the clip FC-008 to 2nd layer L2. In addition, in this edit processing, since a video data is not piled up like synthetic processing but a video data is connected, the direction which becomes previously in time is specified as the 1st layer L1, and the direction which becomes behind in time is specified as the 2nd layer.

[0081] Moreover, it is the thing of the transition effect which switches the image displayed on a screen as wipes and erases the old image by which it is indicated to the wipe effectiveness specified as change-over processing by current by the new image. the wipe effectiveness incidentally specified in the example shown in this drawing 9 -- a result -- the time of switching from an image to the image of clip FC-009 a result of clip FC-008 -- the right-hand side from the left-hand side of a screen -- \*\* -- it is the wipe effectiveness of the class which switches once.

[0082] Moreover, also in this edit processing, as shown in this drawing 9 , in result clip FC-010, the 5th editing point EP 5 is set up from the 1st editing point EP 1 as the edit start point (Inn point) and the point (out point) ending [ edit ] of each clip, and the parameter modification point of edit processing.

[0083] the 1st editing point EP 1 -- a result -- the Inn point IN8 of clip FC-008 -- being shown -- the 2nd editing point EP 2 -- the start point of the wipe effectiveness, and a result -- the Inn point IN9 of clip FC-009 -- being shown -- the 4th editing point EP 4 -- the ending point of the wipe effectiveness, and a result -- the out point OUT8 of clip FC-008 -- being shown -- the 5th editing point EP 5 -- a result -- clip FC- the out point OUT9 of 009 is shown. In addition, the 3rd editing point EP 3 is an editing point set up in order to change the effect parameter of the wipe effectiveness. About this editing point EP 3, it mentions later for details.

[0084] Like synthetic processing and special effect processing in which it explained previously, these results clip FC-008, FC-009, and FC-010 It has the internal time line t8, t9, and t10 therefore expressed by the original internal time code started from the head location of the video data of each clip.

Therefore, the definition of the 5th editing point EP 5 is carried out to the time code on the result clip FC-time line t10 of 010 from the 1st editing point EP 1 mentioned above.

[0085] a result -- the Inn point IN8 and the out point OUT8 of clip FC-008 -- respectively -- a result -- clip FC- therefore, it is defined as the time line t8 of 008 -- having -- these time codes -- respectively -- "00:01:01:20" and "00:04:43:00", and intermediary \*\*\*\*. therefore, the time code of this Inn point IN8 -- a result -- clip FC- the time code "00:00:00:00" of the 1st editing point EP 1 in 010 -- corresponding -- the time code of the out point OUT8 -- a result -- clip FC- the time code "00:03:42:00" of the 4th editing point EP 4 in 010 is supported.

[0086] the same -- a result -- the Inn point IN9 and the out point OUT9 of clip FC-009 -- respectively -- a result -- clip FC- therefore, it is defined as the time line t9 of 009 -- having -- these time codes -- respectively -- "00:00:00:50" and "00:02:06:00", and intermediary \*\*\*\*. therefore, the time code of this Inn point IN9 -- a result -- clip FC- the time code "00:03:39:00" of the 2nd editing point EP 2 in 010 -- corresponding -- the time code of the out point OUT9 -- a result -- clip FC- the time code "00:05:44:10" of the 5th editing point EP 5 in 010 is supported.

[0087] moreover, a result -- clip FC- the start point of the wipe effectiveness set up in order to switch the image of clip FC-009 008 and a result -- a result -- clip FC- it is set as the 2nd editing point EP 2 in 010, and is set as "00:03:39:00" as a time code. Moreover, the ending point of the wipe effectiveness is set as the 4th editing point EP 4 in result clip FC-010, and is set as "00:03:42:00" as a time code.

[0088] When result clip FC-010 are reproduced, therefore, in the period from the 1st editing point EP 1

to the 2nd editing point EP 2 The video image of result clip FC-008 is outputted. In the period from the 2nd editing point EP 2 to the 4th editing point EP 4 An image which switches to the wipe effectiveness at the video image of clip FC-009, and therefore switches from the video image of result clip FC-008 to right-hand side in order of \*\* or an intermediary from the left-hand side of a screen a result is outputted. The image of result clip FC-009 will be outputted in the period from the 4th editing point EP 4 to the 5th editing point EP 5.

[0089] (4) By the graphical display displayed as GUI, then this term, when each module is started, explain the screen of GUI displayed on display 2B of a workstation 2.

[0090] (4-1) This term explains GUI when starting the synthetic module CM at the beginning of GUI \*\*\*\* when starting a synthetic module. In this edit system 1, starting of the synthetic module CM displays graphical display as shown in drawing 10 as GUI of the synthetic module CM on display 2B of a workstation 2.

[0091] As shown in this drawing 10 , as GUI of the synthetic module CM, it roughly divides and, therefore, is constituted by the menu window 30, the clip tree window 31, the key window 32, the library window 33, the time-line window 34, the parameter setting-out window 35, the preview screen-display window 36, the device Control window 37, the content display window 38 of edit, and the control command window 39.

[0092] The menu window 30 is the area for displaying the top menu currently prepared in this edit system 1. In addition, as for this menu window 30, control-module CNTM stands, and a top is displayed from a \*\*\*\* event.

[0093] In the edit system 1 by this invention, for example, the file read-out menu, an initialization menu or a module starting menu, etc. is prepared as a top menu item. If the carbon button of mouse 2D is pushed and a file read-out menu is specified If the list of clips is displayed as a result of already being registered, (the assignment actuation which used this mouse 2D is hereafter called a click), and, and a clip is therefore chosen as click actuation out of it as a result of a request While being displayed on the time-line window which the content of edit of a clip mentions later as a result of [ the ] being chosen, it is displayed on the parameter setting-out window which the content of the parameter set up to the clip as a result mentions later. Therefore, if it reads a clip as a result using this file read-out menu in correcting a clip, as a result of already being registered, as a result, a clip is correctable.

[0094] Moreover, if an initialization menu is therefore chosen as click actuation, reading appearance of the various setting-out items will be carried out, and if a desired item is chosen out of it, the setting-out screen to the selected item will be displayed. Therefore, if it therefore reads the setting-out screen of the item to an initialization menu in initializing to a desired item, a desired value can be set up about the item.

[0095] Moreover, if the command for starting the synthetic module CM, the special effect module SM, or the edit module EM if a module starting menu is therefore chosen as click actuation is displayed and a desired command is chosen out of it, the selected module will be started and GUI corresponding to the module will be displayed on a screen. It is the screen obtained in practice when GUI of the synthetic module CM shown in this drawing 10 therefore also started the synthetic module CM on this module starting menu.

[0096] It is the area where graphical display for which the clip tree window 31 understands visually the up Shimonoseki charge of each clip registered into the clip database is displayed. When it has a relation as the up Shimonoseki charge of each clip showed to drawing 4 , according to the up Shimonoseki charge, a clip tree as shown in drawing 1010 is displayed. Namely, in this case, since the top clip is result clip FC-010, the clip name "FC-010" of result clip FC-010 is displayed on the top of the clip tree window 31. As a low order clip linked to the low order of clip FC-010 as a result, there are clip FC-009 result clip FC-008 and a result. The clip name "FC-008" of these low order clip and "FC-009" are displayed on the location shifted to \*\*\*\*\* and one-step right-hand side in the lower part rather than clip FC-010 in juxtaposition, respectively, as a result of being a high order clip. The line which connects clip FC-008 and FC-009 to result clip FC-010 a result at this time is displayed, and it is shown that up Shimonoseki charge therefore has clip FC-010, FC-008, and FC-009 these results at this.

[0097] Moreover, as a low order clip linked to the low order of result clip FC-008, there are raw material clip MC-001, raw material clip MC-002, and raw material clip MC-003. The clip name "MC-001" of these low order clip, "MC-002", and "MC-003" are displayed on the location shifted to 1 step of \*\*\*\*\* right-hand side in the lower part of clip FC-008 as a result of being a high order clip in juxtaposition, respectively. It is shown that the line which connects result clip FC-008, raw material clip MC-001, MC-002, and MC-003 is displayed, and up Shimonoseki charge therefore has these clip FC-008, MC-001, MC-002, and MC-003 at this also at this time.

[0098] Similarly, there are raw material clip MC-004 as a low order clip linked to the low order of result clip FC-009. The clip name "MC-004" of this low order clip is displayed on the location shifted to \*\*\*\*\* and one-step right-hand side in the lower part of clip FC-009 as a result of being a high order clip. It is shown that the line which connects raw material clip MC-004 to result clip FC-009 is displayed, and up Shimonoseki charge therefore has these clip FC-009 and MC-004 at this also at this time.

[0099] Thus, in the clip tree window 31, it is made as [ know / visually / the relation during the clip registered into the clip database / at a glance ] by having displayed the clip name of each clip in the shape of a tree.

[0100] In addition, the clip the frame surrounding a clip name is displayed by the thick wire is displayed in current and the time-line window 34, and is an intermediary \*\*\*\* clip for edit. Moreover, scroll button 31A of a longitudinal direction is displayed on the lower side location of this clip tree window 31, and it is made as [ scroll / to a longitudinal direction / the clip tree displayed ] by operating this scroll button 31A using mouse 2D.

[0101] Similarly, scroll button 31B of the vertical direction is displayed on the right-hand-side location of the clip tree window 31, and it is made as [ scroll / in the vertical direction / the clip tree displayed ] by operating this scroll button 31B.

[0102] The key window 32 is area where the key selection carbon button for specifying key processing to the clip for edit is displayed, and can specify desired key processing to the clip for edit by clicking the request carbon button in this key selection carbon button. In this case, as a key selection carbon button, as shown in drawing 10 , a luminance key carbon button, the linear key carbon button, the clean key carbon button, the pattern key carbon button, the EKUSUTANARU key carbon button, etc. are prepared.

[0103] Incidentally, key processing is processing which inserts another image in \*\*\*\* omission and there for the area based on a keying signal from a video image. moreover, the image which a luminance key is key processing which performs \*\*\*\* omission processing based on the luminance signal included in a keying signal, a linear key is a kind of a luminance key, and the adjustable width of face of gain is \*\*\*\*\* key processing narrowly as compared with a luminance key, and is inserted in in key processing with a clean key -- a keying signal -- \*\*\*\*\* -- \*\* -- a \*\* -- inserting in -- processing -- it is . Moreover, a pattern key is key processing which performs clipping processing based on a wipe pattern, and EKUSUTANARUKI is performing key processing based on the keying signal supplied from the exterior.

[0104] Also in this key window 32, scroll button 32A of a longitudinal direction is displayed on the lower side location of the key window 32 concerned, and it is made as [ scroll / to a longitudinal direction / the key selection carbon button displayed ] by operating this scroll button 32A. Similarly, scroll button 32B of the vertical direction is displayed on the right-hand-side location of the key window 32, and it is made as [ scroll / in the vertical direction / the key selection carbon button displayed ] by operating this scroll button 32B.

[0105] The library window 33 is the area for displaying a clip in a list as a result of the raw material clip registered into the clip database. If a desired clip is chosen out of the clip displayed on this library window 33, that selected clip can be specified as an object for edit. In addition, about the detail of this library window 33, it mentions later.

[0106] The time-line window 34 is the area for arranging the clip for edit in on a time-axis, and specifying the content of edit. Naturally as a time-line window 34 displayed by the synthetic module

CM, the thing about synthetic processing is displayed. This time-line window 34 was roughly divided, and is divided into time code display area (Time Code), editing point display area (Edit Point), preview range display area (Preview), and the clip appointed area (L1-L10) sequentially from the top.

[0107] Time code display area is area where the time code in an editing point is displayed. In addition, this time code is a time code on the time line of a clip, as a result of being generated based on the content of edit specified in this time-line window 34.

[0108] Editing point display area is area which therefore points to the point set up as an editing point to Mark Misumi. For example, when synthetic processing as shown in drawing 4 and drawing 7 is specified, it points to the editing points EP1-EP8 using Mark Misumi.

[0109] When the preview carbon button and BIYUU carbon button which are mentioned later are operated in preview range display area, it is the area which shows the range of the video data displayed on the preview screen-display window 36. Since from the editing point EP 1 to the editing point EP 8 is set up as a display rectangle in the case of this example (namely, a result clip FC-008 whole), the bar in which that section is shown is displayed.

[0110] The clip appointed area is the area for specifying the clip for [ which performs synthetic processing ] edit to each layer. In this edit system 1, ten layers from a layer L1 to a layer L10 are prepared, and the clip which serves as a raw material of synthetic processing at that each can be specified. In addition, the display rectangle is restricted as this clip appointed area (as shown in drawing, it is a five layer grade), and no layers L1-L10 can be displayed at once. However, intermediary \*\*\*\* [ as ] which can therefore display a desired layer on this since the clip appointed area can be scrolled in the vertical direction by operating scroll button 34A currently displayed on the right-hand side of this clip appointed area.

[0111] Among ten layers L1-L10, a layer L1 is a layer for specifying the clip used as a base (lowest layer) image at the time of synthetic processing, and is a layer for specifying the clip which goes to a layer L10 from a layer L2 in piles to the base image. In addition, the thing which has a large layer number serves as the upper layer, and a layer L10 turns into a layer of the maximum upper layer here.

[0112] Each layers L1-L10 are divided into the video area (Video) for specifying the clip of a synthetic processing object, respectively, and the key area (Key) for specifying the key processing performed to the specified clip. In this case, that clip is set up to that layer by placing the graphical image (this being hereafter called a cel) of the shape of a rectangle which shows a clip in video area. The key processing to the clip specified as the layer is set up by similarly putting the cel which shows key processing on key area.

[0113] As shown in this drawing 10 here, in setting up raw material clip MC-003 to a layer L1, it chooses raw material clip MC-003 by clicking raw material clip MC-003 in the clip tree window 31 first, or clicking raw material clip MC-003 in the library window 33. If such processing is performed, since the cel of raw material clip MC-003 will be displayed, if this is moved to the video area of a layer L1 and it puts on a request location, raw material clip MC-003 will be set up to a layer L1.

[0114] Similarly, in setting up EKUSUTANARUKI to a layer L1, it chooses EKUSUTANARUKI by clicking an EKUSUTANARU key carbon button in the key window 32 first. If such processing is performed, since the cel which shows EKUSUTANARUKI will be displayed, EKUSUTANARUKI is set [ in / for this / the key area of a layer L1 ] up to a layer L1. It is the same as the actuation at the time of the layer L1 which incidentally also mentioned above the actuation when setting up a clip and key processing to layers L2-L10.

[0115] in addition, the die length corresponding to DEYURESHIYON (time amount from the beginning of a clip to an end) of the clip in the die length of the cel which shows a clip -- intermediary \*\*\*\*. Moreover, since the cel which shows key processing becomes the clip and pair which were put on video area, it becomes the same die length as the clip put on video area. Moreover, intermediary \*\*\*\* [ as ] understood by one division to which it is made as [ display / into each cel / the alphabetic character which shows a clip name or a key processing name ], and which clip or key processing was set by this.

[0116] Moreover, if a clip is double-clicked and chosen as a result of already being placed and displayed on the clip appointed area the module (namely, the synthetic module CM --) which created the clip as a

result While being displayed on the time-line window on GUI of the module with which the content of edit which the special effect module SM or the edit module EM is started, and is given to the clip as a result corresponds The parameter set up to the clip as a result is displayed on a parameter setting-out window.

[0117] The parameter setting-out window 35 is area which sets up the various parameters concerning edit. Naturally as a parameter setting-out window 35 displayed when the synthetic module CM is started, the thing about synthetic processing is displayed, and as shown in drawing 10 , the graphical display for setting up the gain at the time of synthetic processing is displayed.

[0118] In this case, the gain at the time of synthetic processing is a synthetic ratio when piling up a video data. That is, gain It is piling up so that the upper video data's will be piled up so that a lower layer video data's may not look perfect if it is 100%, for example, the upper video data's is piled up so that a lower layer video data's can be mostly transparent and seen at a rate like one half if gain's is 50%, a lower layer video data's may be thoroughly transparent, and it may be visible, if gain's is 0%, and the upper video data's cannot be seen.

[0119] In addition, the axis of abscissa (namely, time-axis) of the time-line window [ this parameter setting-out window 35 and ] 34 mentioned above corresponds, and it is made as [ decide / the modification point of a parameter ], looking at the content of synthetic processing specified in the time-line window 34. A longitudinal direction can be made to scroll the graphical image in this parameter setting-out window 35 by incidentally operating scroll button 35A in the lower side location of the parameter setting-out window 35 about the this direction of an axis of abscissa, i.e., a longitudinal direction. At this time, since, as for the time-line window 34 and the parameter setting-out window 35, the axis of abscissa corresponds, the graphical image in the time-line window 34 concerned and the graphical image in the parameter setting-out window 35 interlock, and are simultaneously scrolled by the longitudinal direction. In addition, the graphical image in the parameter setting-out window 35 concerned can be scrolled in the vertical direction by operating scroll button 35B in the right-hand-side location of the parameter setting-out window 35 about the vertical direction.

[0120] In setting up the gain of the clip specified as each layer here, it specifies the layer which clicks a desired layer number and carries out a parameter setup after this out of the layer number first displayed on the left corner of the parameter setting-out window 35. Then, while deciding the point which changes a parameter, looking at the content of synthetic processing specified in the time-line window 34, the gain value to set up is decided and an axis of ordinate clicks the location corresponding to the fixed point and fixed value in the parameter setting-out window 35 in which an axis of abscissa consists of a time-axis with a gain value. Thereby, the gain value and the gain modification point corresponding to the clicked location are automatically registered into a clip database.

[0121] For example, gain of raw material clip MC-003 specified as the layer L1 as shown in this drawing 10 In setting up to 100%, gain in the location of the Inn point of raw material clip MC-003, and an out point If the location which is 100% is clicked, gain It is set up to 100%. [ from the Inn point of raw material clip MC-003 to all out points ] In addition, in this edit system 1, since interpolation processing of between the parameter setting-out points is carried out so that the set point may become continuous, and that interpolated value is set up automatically, if the same value is set up in the two parameter setting-out points in this way, all the meantime will be set as that value.

[0122] By the way, gain is set up to 59%. raw material clip MC-002 [ moreover, ] set as the layer L2 -- receiving -- the Inn point (the editing point EP 2) -- Before a few [ the point which raw material clip MC-003 of a layer L3 repeat ], it is gain in a location (the editing point EP 3) 100 It is set as percent. What is necessary is just to click the point which corresponds in the parameter setting-out window 35, respectively, in [ of an out point (the editing point EP 6) ] setting up gain to 0% by the way. If it does in this way, the set-up gain value will be automatically registered into a clip database, respectively. In addition, from the editing point EP 2 before the editing point EP 3 and from the editing point EP 3 before the editing point EP 6, interpolation processing is carried out so that a gain value may continue linearly based on the value set up at each editing point, and the interpolated value is set up automatically.

[0123] As opposed to raw material clip MC-003 which similarly were set as the layer L3 the Inn point (the editing point EP 4) -- by the way -- gain -- 100 It is set as percent. What is necessary is just to click the point of a raw material which sets up gain to 67% mostly in a center position (the editing point EP 5), and corresponds in the parameter setting-out window 35 in [ of an out point (the editing point EP 7) ] setting up gain to 51% by the way, respectively. If it does in this way, the set-up gain value will be automatically registered into a clip database, respectively. In addition, also in this case, from the editing point EP 4 before the editing point EP 5 and from the editing point EP 5 before the editing point EP 7, interpolation processing is carried out so that a gain value may continue linearly based on the value set up at each editing point, and that value is set up automatically.

[0124] If a gain value is set up in this way, when the gain value concerned carries out sequential change and goes by each timing After the video data of raw material clip MC-002 begins to look gradual to on the video data of raw material clip MC-003 used as the base, Furthermore, the video data of raw material clip MC-001 can be seen on those video datas, and an image of an image with which the video data of raw material clip MC-002 and MC-001 diminishes gradually is obtained after that.

[0125] In addition, as the parameter setting-out window 35 is shown in drawing 10 , the value of the set-up parameter can be made to be able to respond with an editing point, it is made as [ display / in the shape of / which made the axis of abscissa time amount and made the axis of ordinate the gain value / a graph ], an operator can see the display by this, and it can grasp visually what kind of parameter was set up to which timing to which layer at a glance.

[0126] The preview screen-display window 36 is area where the video data of a clip is displayed as a result of a raw material clip, when the preview carbon button mentioned later, a BIYUU carbon button, an all preview carbon button, or an all BIYUU carbon button is operated. By having prepared such display area, as a result of being generated as a result of a raw material clip or edit, carrying out an editing task, the video image of a clip can be checked.

[0127] The device Control window 37 is area where the command carbon button for controlling actuation of the video disc recorder 5 with which the video data of a clip is saved is displayed. As shown in this drawing 10 , as a command carbon button, playback carbon button 37A, stop button 37B, and six skip carbon buttons 37C-37H are formed. In this case, playback carbon button 37A is a command carbon button for sending out a playback command to a video disc recorder 5. Moreover, stop button 37B is a command carbon button for sending out a playback PAUSE command to a video disc recorder 5. Moreover, the skip carbon buttons 37C and 37D are command carbon buttons for sending out the skip command with which an one-frame front stirrup makes a playback location skip to one-frame back to a video disc recorder 5, respectively. Moreover, the skip carbon buttons 37E and 37F are command carbon buttons for sending out the skip command which makes a playback location skip to the editing point in front of one, or the editing point after one, respectively to a video disc recorder 5. Moreover, the skip carbon buttons 37G and 37H are command carbon buttons for sending out the skip command which makes a playback location skip to the head or the last of a video data, respectively to a video disc recorder 5. By preparing such a command carbon button, actuation of a video disc recorder 5 is easily controllable, carrying out an editing task.

[0128] The content display window 38 of edit is the area for displaying the content of edit which it was also called the KO time line and was therefore specified as the time-line window 34. In this case, in the time-line window 34, on constraint of a screen, since all the contents of edit all cannot be displayed at once, it is made as [ grasp / what kind of content of edit is specified as a whole / it / easily ] by displaying the graphical image which reduced that content of edit in this content viewing window of edit. for example, the cylindrical graphical image which shows the clip specified as each layer according to the content of edit when the content of edit which compounds three raw material clip MC-003 which were mentioned above in the time-line window 34, MC-002, and MC-001 is specified -- 3 step pile \*\*\*\*\* -- a graphical image [ like ] is displayed on the content display window 38 of edit. Thereby, while an operator looks at this display and grasping the whole aspect of the content of edit specified, it may grasp easily that that content is synthetic processing of three clips.

[0129] In addition, in this content viewing window 38 of edit, as a result of [ which is displayed on the

library window 33 or the clip tree window 31 ] having already registered with the clip database, also when a clip is chosen, the graphical image which, as a result, shows the content of edit of a clip is displayed. It is \*\*\*\*\* to grasp easily the content of edit specified to the clip as a result of [ the ] choosing, also when a clip is chosen, as a result of being shown by the library window 33 and the clip tree window 31 into the editing task in the time-line window 34 by this.

[0130] Finally the control command window 39 is area where the list of the control command used in this edit system 1 is displayed. As shown in this drawing 10 , as a control command carbon button displayed, there are an editor carbon button (Editor), a composite carbon button (Composite), a special effect carbon button (S-Effect), a preview carbon button (Preview), a BIYUU carbon button (View), an all preview carbon button (All Preview), an all BIYUU carbon button (All View), etc., for example.

[0131] An editor carbon button, a composite carbon button, and a special effect carbon button are carbon buttons for starting the module for edit, respectively. Namely, the synthetic module CM can be under starting, for example, and an editor carbon button is a carbon button for starting the edit module EM, and if this editor carbon button is clicked, \*\*\*\*\* can also start the edit module EM. Moreover, the special effect module SM can be under starting, for example, and a composite carbon button is a carbon button for starting the synthetic module CM, and if this composite carbon button is clicked, \*\*\*\*\* can also start the synthetic module CM. Moreover, the edit module EM can be under starting, for example, and a special effect carbon button is a carbon button for starting the special effect module SM, and if this special effect carbon button is clicked, \*\*\*\*\* can also start the special effect module SM.

[0132] On the other hand, a preview carbon button, a BIYUU carbon button, an all preview carbon button, and an all BIYUU carbon button are carbon buttons for the content check of a clip as a result of a raw material clip. That is, a preview carbon button is a carbon button used when displaying the video data of the selected clip on the preview screen-display window 36. In addition, since the specified content of edit is not performed when this preview carbon button is operated, the video data displayed may differ from the final result (when the content of edit is already performed and the \*\*\*\*\* video data is generated by that content of edit, the video data of the final result is displayed). However, since a display is started shortly after operating this preview carbon button, it is used to check the die length of a clip in an edit process.

[0133] A BIYUU carbon button is a carbon button used when displaying the video data of the selected clip on the preview screen-display window 36. Although this BIYUU carbon button will require time amount before it is displayed when this BIYUU carbon button is operated since the specified content of edit is performed unlike a preview carbon button, it can check the video data after edit.

[0134] An all preview carbon button is a carbon button used when a clip is not chosen but \*\* also displays the video data from the clip of the beginning for edit to the clip of the last for edit on the preview screen-display window 36. In addition, the content of edit from which this all preview carbon button is similarly specified as the preview carbon button is not performed.

[0135] An all BIYUU carbon button is a carbon button used when performing the content of edit specified to all the clips for edit and displaying the video data on the preview screen-display window 36. By operating this all BIYUU carbon button, the specified content of edit is performed and the video data of the final result can be checked. In addition, when the content of edit is performed, the generated clip video data is automatically memorized by the video disc recorder 5, and is registered into the clip database CDB.

[0136] (4-2) GUI, then this term when starting a special effect module explain GUI when starting the special effect module SM. In this edit system 1, starting of the special effect module SM displays graphical display as shown in drawing 11 as GUI of the special effect module SM on display 2B of a workstation 2.

[0137] As shown in this drawing 11 , as GUI of the special effect module SM, it size-comes, it divides, and, therefore, is constituted by the menu window 30, the clip tree window 31, the effect selection window 40, the library window 33, the time-line window 41, the parameter setting-out window 42, the preview screen-display window 36, the device Contol window 37, the content display window 38 of edit, and the control command window 39.

[0138] In addition, among the windows displayed in GUI of this special effect module SM, since the menu window 30, the clip tree window 31, the library window 33, the preview screen-display window 36, the device Control window 37, the content viewing window 38 of edit, and the control command window 39 are the same as the case of the synthetic module CM mentioned above, explanation is omitted here.

[0139] First, the effect selection window 40 is the area for choosing the special effect given to the video data of a clip, and the command carbon button of various special effect is displayed. In this case, as a command carbon button displayed The trail carbon button for specifying the trail processing which adds 3D carbon button for specifying three-dimension image transformation, and an after-image, The brick carbon button for specifying brick processing which sticks a video image on a cubical field, is made to rotate it, and goes, The shadow carbon button for specifying the shadow processing which adds a shadow to a video data, The mix carbon button for specifying the mix processing which mixes a video data, The crop carbon button for specifying the crop processing which starts the light button for specifying the light processing which showers a light from an one direction and adds a shadow to a body, and the predetermined range of a video data etc. is prepared.

[0140] In this effect selection window 40, scroll button 40A of a longitudinal direction is displayed on the lower side location of area, and it is made as [ scroll / to a longitudinal direction / the command carbon button displayed ] by operating this scroll button 40A. Similarly, scroll button 40B of the vertical direction is displayed on the right-hand-side location of the effect selection window 40, and it is made as [ scroll / in the vertical direction / the command carbon button displayed ] by operating this scroll button 40B.

[0141] Intermediary \*\*\*\* [ as ] as which the special effect will be automatically specified if it clicks the command carbon button corresponding to the special effect for which it asks in such an effect selection window 40 after specifying the editing point of giving special effect in the time-line window 41 in choosing desired special effect.

[0142] The time-line window 41 is the area for arranging the clip for edit in on a time-axis, and specifying the content of edit. Naturally as a time-line window 41 displayed by the special effect module SM, the thing about special effect processing is displayed. This time-line window 41 was roughly divided, and is divided into time code display area (Time Code), editing point display area (Edit Point), preview range display area (Preview), and a clip and the special effect appointed area (L1-L10) sequentially from the top.

[0143] Time code display area is area where the time code in an editing point is displayed. In addition, this time code is a time code on the time line of a clip, as a result of being generated based on the content of edit specified in this time-line window 41.

[0144] Editing point display area is area which therefore points to the point set up as an editing point to Mark Misumi. For example, when special effect processing as shown in drawing 4 and drawing 8 is specified, it points to the editing points EP1-EP7 using Mark Misumi.

[0145] When the preview carbon button and BIYUU carbon button which were mentioned above are operated in preview range display area, it is the area which shows the range of the video data displayed on the preview screen-display window 36. Since from the editing point EP 1 to the editing point EP 7 is set up as a display rectangle in the case of this example (namely, a result clip FC-009 whole), the bar in which that section is shown is displayed.

[0146] A clip and the special effect appointed area are the area for specifying the special effect given to a clip for every layer. Intermediary \*\*\*\* [ as ] which can specify special effect processing to that clip, respectively while ten layers from a layer L1 to a layer L10 are prepared and being able to specify the clip set as the object of special effect processing at that each in this edit system 1. In addition, the display rectangle is restricted as this clip and special effect appointed area (as shown in drawing, it is an about two layer grade), and no layers L1-L10 can be displayed at once. However, intermediary \*\*\*\* [ as ] which can therefore display a desired layer on this by that which can scroll a clip and the special effect appointed area in the vertical direction by operating scroll button 41A currently displayed on the right-hand side of this clip and the special effect appointed area.

[0147] Each layers L1-L10 are divided into four special effect appointed area (E1-E4), the video area (Video) for specifying the clip which gives special effect, and the key area (Key) for specifying the key processing to the clip, respectively. The special effect appointed area is the area for specifying the special effect given to the clip registered into video area, and since four of this are prepared in one layer, it is made as [ specify / four special effect / to one clip / simultaneously ]. For example, if specify mosaic processing as special effect E1, crop processing is specified as special effect E2, three-dimension image transformation is specified as special effect E3 and trail processing is specified as special effect E4 as shown in this drawing 11 , those four special effect processings can be performed to clip MC-004 specified in video area.

[0148] In the special effect appointed area, if the command carbon button of the request in the effect selection window 40 is clicked after specifying the range which therefore gives special effect that it specifies an editing point beforehand, when special effect is set up, since the cel which shows the selected special effect will be displayed, the special effect is set [ in / for the cel / the special effect appointed area ] up automatically.

[0149] In setting up a clip in video area, it chooses the clip for edit by clicking the clip which clicks the clip first displayed on the library window 33, or is displayed on the clip tree window 31. If such processing is performed, since the cel which shows the selected clip will be displayed, if this is put on the request location of video area, a clip can be set up to video area.

[0150] Moreover, since the effect selection window 40 will switch to the key window 32 explained previously if the part of "Key" of key area is clicked first in setting up key processing in key area, a desired key carbon button is clicked out of it, and key processing is chosen. If such processing is performed, since the cel which shows the selected key processing will be displayed, if the cel is put on key area, the key processing will be set up automatically.

[0151] In addition, if a clip is double-clicked and chosen as a result of already being placed and displayed on video area the module (namely, the synthetic module CM --) which created the clip as a result While being displayed on the time-line window on GUI of the module with which the content of edit which the special effect module SM or the edit module EM is started, and is given to the clip as a result corresponds The parameter set up to the clip as a result is displayed on a parameter setting-out window.

[0152] The parameter setting-out window 42 is area which sets up the parameter in the special effect processing specified by an operator. In this parameter setting-out window 42, a click of the command carbon button of the effect selection window 40 displays the parameter setup screen about that clicked special effect. For example, if 3D carbon button is clicked in the effect selection window 40 and three-dimension image transformation is specified, the parameter setup screen about three-dimension image transformation as shown in drawing 11 will be displayed on this parameter setting-out window 42.

[0153] As a parameter in three-dimension image transformation, as shown in drawing 11 , there are the location on three-dimension space (X, Y, Z), a hand of cut on three-dimension space (X, Y, Z), an aspect ratio (Asp) that shows the aspect ratio of an image, a skew (Skew) which is the parameter of distortion, and a perspective value (Pers) showing a far and near value. The value of these parameters is made as [ set / as any value / it / between the maximum setting range MAX on the basis of a default (= "0"), and the minimum setting range MIN ].

[0154] The parameter setting-out window 42 and the time-line window 41 mentioned above are intermediary \*\*\*\* [ as ] which can determine the modification point of a parameter while looking at the content of the special effect processing which the axis of abscissa (namely, time-axis) was in agreement, and was specified in the time-line window 41. A longitudinal direction can be made to scroll the graphical image in this parameter setting-out window 42 by incidentally operating scroll button 42A in the lower side location of the parameter setting-out window 42 about the this direction of an axis of abscissa, i.e., a longitudinal direction. At this time, since, as for the time-line window 41 and the parameter setting-out window 42, the axis of abscissa corresponds, the graphical image in the time-line window 41 concerned and the graphical image in the parameter setting-out window 42 interlock, and are simultaneously scrolled by the longitudinal direction. In addition, the graphical image in the parameter

setting-out window 42 concerned can be scrolled in the vertical direction by operating scroll button 42B in the right-hand-side location of the parameter setting-out window 42 about the vertical direction.

[0155] In setting up the parameter of three-dimension image transformation actually here, it specifies the item which clicks a desired item and carries out a parameter setup after this out of the parameter item first displayed on the left corner of the parameter setting-out window 42. Then, while deciding the point which changes a parameter, looking at the content specified in the time-line window 41, the set point is decided and an axis of ordinate clicks the location corresponding to the fixed point and fixed set point in the parameter setting-out window 42 in which an axis of abscissa consists of a time-axis with parameter value. Thereby, the parameter value and the parameter modification point corresponding to the clicked location are automatically registered into the clip database CDB.

[0156] For example, if the place of the value for which it will wish if the location of X shaft orientations is gradually moved in the minus direction from the editing point EP 4 is clicked in order and it goes as shown in drawing 11, the value will be registered automatically. If the place of the value for which it will wish if the location of Y shaft orientations is similarly moved to a plus direction gradually from the editing point EP 6 is clicked in order and it goes, the value will be registered automatically. If the place of the value for which it will wish if the location of Z shaft orientations is similarly moved to a plus direction gradually from the editing point EP 2 is clicked in order and it goes, the value will be registered automatically. In addition, a value which a video image moves continuously is automatically set up by interpolation processing between the points and the points specified by an operator.

[0157] Moreover, if revolution processing which a video image is gradually rotated in the minus direction focusing on the X-axis in the range from the editing point EP 2 to the editing point EP 5, and hard flow is made to rotate gradually again after the editing point EP 5 is performed and the place of a desired value will be clicked in the editing points EP5 and EP7, the value will be registered automatically. In addition, a value which a video image rotates continuously is automatically set up by interpolation processing between the points and the points specified by an operator also in this case. It can be decided to be arbitration by setting out whether incidentally it interpolates linearly or it interpolates in a spline curve. In this example, since it is set up so that it may interpolate in a spline curve about revolution processing, it is set as a \*\*\*\*\* value by the spline curve between the points specified by an operator.

[0158] In this way, if a desired value is set up to the parameter of special effect in this parameter setting-out window 42, the value of that parameter will be registered into the clip database CDB, and special effect will be given to the video data of the clip for edit based on the value of that registered parameter. In addition, as this parameter setting-out window 42 is shown in drawing 11, the value of the set-up parameter can be made to be able to respond with an editing point, it is made as [ display / in the shape of / which made the axis of abscissa time amount and made the axis of ordinate parameter value / a graph ], an operator can see that display by this, and it can grasp visually what kind of value was set up to which timing to which parameter at a glance.

[0159] (4-3) GUI, then this term when starting an edit module explain GUI when starting the edit module EM. In this edit system 1, starting of the edit module EM displays graphical display as shown in drawing 12 as GUI of the edit module EM on display 2B of a workstation 2.

[0160] As shown in this drawing 12, as GUI of the edit module EM, it roughly divides and, therefore, is constituted by the menu window 30, the clip tree window 31, the effect selection window 50, the library window 33, the time-line window 51, the parameter setting-out window 52, the preview screen-display window 36, the device Control window 37, the content display window 38 of edit, and the control command window 39.

[0161] In addition, among the area displayed in GUI of this edit module EM, since the menu window 30, the clip tree window 31, the preview screen-display window 36, the device Control window 37, and the control command window 39 are the same as the case of the synthetic module CM mentioned above, explanation is omitted here.

[0162] First, the effect selection window 50 is the area for choosing the transition effect used when switching the video data of the clip specified as an object for edit, and the command carbon button of

various transition effects is displayed. in this case, as a command carbon button displayed The wipe carbon button which specifies the wipe effectiveness which switches an image as wipes and erases the image by which it is indicated by current by the new image, The slide carbon button which specifies the slide effectiveness which therefore switches a new image to making an old image slide like a paper play, The split carbon button for specifying the split effectiveness therefore switched to a new image that an old image is divided and it makes the divided image slide, The page turn carbon button for specifying the page turn processing which switches an image as turns over a page for the squeeze carbon button for specifying the squeeze processing which switches an image on an old image as opens a new image, and an old image etc. is prepared.

[0163] In this effect selection window 50, scroll button 50A of a longitudinal direction is displayed on the lower side location of area, and it is made as [ scroll / to a longitudinal direction / the command carbon button displayed ] by operating this scroll button 50A. Similarly, scroll button 50B of the vertical direction is displayed on the right-hand-side location of the effect selection window 50, and it is made as [ scroll / in the vertical direction / the command carbon button displayed ] by operating this scroll button 50B.

[0164] Intermediary \*\*\*\* [ as ] as which the transition effect will be automatically specified if it clicks the command carbon button corresponding to the transition effect for which it asks in such an effect selection window 50 after specifying the editing point of giving a TORAJISHIYON effect in the time-line window 51 in choosing a desired transition effect.

[0165] The library window 33 is the area for displaying a clip in a list as a result of the raw material clip registered into the clip database CDB. This library window 33 is made by clicking the place of that title bar and extending window area as [ display / the whole library window 33 / as shown in this drawing 12 ], although only the title bar is usually displayed as shown in drawing 10 or drawing 11 .

[0166] In the library window 33, as shown in this drawing 12 , therefore, each clip is displayed on card-like graphical display 33A. In this case, therefore, card-like graphical display 33A is constituted by still picture display 33B, attribute display 33C, and clip name display 33D. It is made by still picture display 33B as [ display / the still picture of the Inn point of the clip or an out point ], and, thereby, an operator can grasp easily in that in which the screen displayed on the still picture display 33B is seen, and the clip is formed by what kind of video data.

[0167] The alphabetic character "MC" MC [ "FC" which shows the attribute of the clip, or ] Becoming is displayed on attribute display 33C. In this case, it is shown that "FC" is a clip as a result of generating that clip as a result of edit processing, and it is shown that "MC" is the raw material clip which that clip only took out from the source video data. Thus, by having displayed the information which shows an attribute, an operator can see the display and can grasp easily whether the clip is a result clip or it is a raw material clip. When the clip is generated, the clip name which the operator added is displayed on clip name display 33D. In addition, this clip name is registered into the clip database CDB as clip management data so that it may mention later.

[0168] The clip for edit can be easily chosen from the already registered clips in this way by having displayed in a list the clip already registered into the clip database CDB in the library window 33.

[0169] In addition, if scroll button 33E is displayed on the right-hand-side location of this library window 33 and this scroll button 33E is operated, this library window 33 can be scrolled in the vertical direction, and all the clips registered into the library window 33 concerned can be displayed. \*\*\*\*\* is also made [ choosing the clip or ] with the clip which is not actual condition vanity \*\*\*\* by this.

[0170] The time-line window 51 is the area for arranging the clip for edit in on a time-axis, and specifying the content of edit. Naturally as a time-line window 51 displayed by the edit module EM, the thing about edit processing is displayed. This time-line window 51 was roughly divided, and is divided into time code display area (Time Code), editing point display area (Edit Point), preview range display area (Preview), video and the effect appointed area (V), and the audio appointed area (A) sequentially from the top.

[0171] Time code display area is area where the time code in an editing point is displayed. In addition, this time code is a time code on the time line of a clip, as a result of being generated based on the

content of edit specified in this time-line window 51.

[0172] Editing point display area is area which therefore points to the point set up as an editing point to Mark Misumi. For example, when edit processing as shown in drawing 4 and drawing 9 is specified, it points to the editing points EP1-EP5 using Mark Misumi. However, in drawing 12, only the editing points EP2-EP4 are displayed on the relation which shows only the neighborhood which gives a transition effect in the time-line window 51. In addition, if it operates the scroll button of a longitudinal direction in the parameter setting-out window 52 so that it may mention later in displaying the editing point EP 1 and the editing point EP 5, the graphical image in the time-line window 51 can be scrolled to a longitudinal direction, and the editing point EP 1 and the editing point EP 5 can be displayed.

[0173] When the preview carbon button and BIYUU carbon button which were mentioned above are operated in preview range display area, it is the area which shows the range of the video data displayed on the preview screen-display window 36. Since between the editing point EP 4 and the editing points EP 5 is set up as a display rectangle from between the editing point EP 1 and the editing points EP 2 in the case of this example, the bar in which that section is shown is displayed.

[0174] Video and the effect appointed area are divided into the 1st for specifying the clip for edit and the 2nd video area (Video-L1, Video-L2), and the effect area (Effect) for specifying the transition effect given to the clip for [ the ] edit.

[0175] Since the cel which shows the clip will be displayed if a desired clip is clicked in the library window 33 or the clip tree window 31 when specifying the clip for edit in the 1st or 2nd video area, if the cel is put on the 1st or 2nd video area, the clip will be set as the 1st or 2nd video area, and will be registered as a clip for edit. for example, a result -- clip FC-008 -- clicking -- that cel -- the 1st video area -- placing -- a result -- clip FC- 009 is clicked and that cel is put on the 2nd video area, it is shown in this drawing 12 -- as -- the 1st and 2nd video area -- respectively -- a result -- clip FC- 008 and FC-009 are set up. In addition, the video data of the clip set as the 1st video area turns into an old video data, and the video data of a clip set as the 2nd video area turns into a video data which switches newly.

[0176] Similarly, if it clicks a desired effect carbon button in the effect selection window 50 in specifying a transition effect in effect area, since the cel which shows the effect will be displayed, if the cel is put on effect area, it will be set up as an effect which the effect gives to the clip for edit. For example, if a wipe carbon button is clicked in the effect selection window 50, since the cel which shows wipe will be displayed, as that cel is shown in this drawing 12 also in effect area, wipe processing is set up as switch processing of clip FC-009 result clip FC-008 and a result.

[0177] The audio appointed area is the area for specifying the audio data sent out with a video data, and is divided into the 1st and 2nd audio area (Audio-1ch and Audio-2ch) in this case. In addition, in the 1st and 2nd audio area, when setting up audio data, it is the same as the setting-out approach in video area, and if a desired clip is clicked and the cel is put on the 1st or 2nd audio area, it will be set up as audio data which the audio data of the clip send out. Incidentally the audio data set as the 1st audio area are sent out to the 1st channel of stereophonic broadcasting, and the audio data set as the 2nd audio area are sent out to the 2nd channel of stereophonic broadcasting.

[0178] In addition, if a clip is double-clicked and chosen as a result of already being put on the 1st or 2nd video area and being displayed on it the module (namely, the synthetic module CM --) which created the clip as a result While being displayed on the time-line window on GUI of the module with which the content of edit which the special effect module SM or the edit module EM is started, and is given to the clip as a result corresponds The parameter set up to the clip as a result is displayed on a parameter setting-out window.

[0179] The parameter setting-out window 52 is area which sets up the parameter of the transition effect specified by an operator. In this parameter setting-out window 52, a click of the effect carbon button of the effect selection window 50 displays the parameter setup screen about that clicked effect. For example, if a wipe carbon button is clicked in the effect selection window 50 and wipe processing is specified, the parameter setup screen about wipe processing as shown in drawing 12 will be displayed on this parameter setting-out window 52.

[0180] As a parameter in wipe processing, as shown in this drawing 12 The aspect ratio (Aspect) which

shows the aspect ratio of a wipe pattern, and the angle type which specifies the include angle of a wipe pattern (Angle), The speed which specifies the rate of the wipe pattern at the time of a screen change-over (Speed), The level modulation (H Mod) which specifies the fluctuation given to the horizontal direction of a wipe pattern edge, and the vertical modulation (H Mod) which specifies the fluctuation given to the perpendicular direction of a wipe pattern edge occur. The value of these parameters is made as [ set / as any value / it / between the maximum setting range MAX on the basis of a default (= "0"), and the minimum setting range MIN ]. However, about the parameter of speed, the default is set as the minimum setting range MIN, and it is [ from a default to the maximum set point MAX and ] intermediary \*\*\*\* as adjustable range.

[0181] The parameter setting-out window 52 and the time-line window 51 mentioned above are intermediary \*\*\*\* [ as ] which can determine the modification point of a parameter while looking at the content of edit processing which the axis of abscissa (namely, time-axis) was in agreement, and was specified in the time-line window 51. A longitudinal direction can be made to scroll the graphical image in this parameter setting-out window 52 by incidentally operating scroll button 52A in the lower side location of the parameter setting-out window 52 about the this direction of an axis of abscissa, i.e., a longitudinal direction. At this time, since, as for the time-line window 51 and the parameter setting-out window 52, the axis of abscissa corresponds, the graphical image in the time-line window 51 concerned and the graphical image in the parameter setting-out window 52 interlock, and are simultaneously scrolled by the longitudinal direction. In addition, the graphical image in the parameter setting-out window 52 concerned can be scrolled in the vertical direction by operating scroll button 52B in the right-hand-side location of the parameter setting-out window 52 about the vertical direction.

[0182] In setting up the parameter of wipe processing actually here, it specifies the item which clicks a desired item and carries out a parameter setup after this out of the parameter item first displayed on the left corner of the parameter setting-out window 52. Then, while deciding the point which changes a parameter, looking at the content specified in the time-line window 51, the set point is decided and an axis of ordinate clicks the location corresponding to the fixed point and fixed set point in the parameter setting-out window 52 in which an axis of abscissa consists of a time-axis with parameter value. Thereby, the parameter value and the parameter modification point corresponding to the clicked location are automatically registered into the clip database CDB.

[0183] For example, if the place of the value for which it will wish if you want to bet the aspect ratio of a wipe pattern on the editing point EP 4, and to enlarge it gradually from the editing point EP 2 as shown in drawing 12 is clicked in order and it goes, the value will be registered automatically. In addition, a value from which the aspect ratio of a wipe pattern changes continuously is automatically registered by interpolation processing between the points and the points specified by an operator.

[0184] If the place of the value for which it will wish if similarly it enlarges gradually, covering the angle type of a wipe pattern over the editing point EP 3 from the editing point EP 2, and it applies to the editing point EP 4 from the editing point EP 3, and a wipe pattern is gradually leaned to hard flow and it is made to want to go is clicked in order and it goes, the value will be registered automatically. In addition, a value from which a wipe pattern changes continuously is automatically registered by interpolation processing between the points and the points specified by an operator also in this case. It can be decided to be arbitration by setting out whether incidentally it interpolates linearly or it interpolates in a spline curve. In this example, since it is set up so that it may interpolate in a spline curve about an angle type, it is set as a \*\*\*\*\* value by the spline curve between the points specified by an operator.

[0185] Moreover, if the place of the value for which it will wish if the editing point EP 2 to the editing point EP 3 fixes speed of a wipe pattern, it is applied to the editing point EP 4 from the editing point EP 3 and you want to gather speed gradually can be clicked in order, the value will be registered automatically. In addition, a value from which the speed of a wipe pattern changes continuously is automatically registered by interpolation processing between the points and the points specified by an operator also in this case.

[0186] In this way, if a desired value is set up to the parameter of a transition effect in this parameter

setting-out window 52, the value of that parameter will be registered into the clip database CDB, and a transition effect will be given to the video data of the clip for edit based on the value of that registered parameter. In addition, as this parameter setting-out window 52 is shown in drawing 12, the value of the set-up parameter can be made to be able to respond with an editing point, it is made as [ display / in the shape of / which made the axis of abscissa time amount and made the axis of ordinate parameter value / a graph ], an operator can see that display by this, and it can grasp visually what kind of value was set up to which timing to which parameter at a glance.

[0187] The content display window 38 of edit is the area for therefore displaying the content of edit therefore specified that it mentioned above in the time-line window 51 on a graphical image. As mentioned above in the time-line window 51, when two clip FC-008 and edit processing which therefore switches FC-009 to wipe processing are specified, a graphical image which sandwiched the graphical image which shows wipe processing in a completely different class by the cylindrical graphical image which shows each clip is displayed. Thereby, an operator can see this display and can grasp easily what kind of content of edit was directed as a whole. As shown especially in this drawing 12, when only some range is displayed in the time-line window 51, the whole content of processing is understood, and if \*\*\*\*\* looks at this content display window 38 of edit, it can grasp the whole content of processing easily.

[0188] (5) In the edit system 1 by management method this invention of the clip management data in a clip database, it is made and be so that all clips may be registered into the clip database CDB, as a result of being generated by editing into a raw material clip or its raw material clip therefore. As data registered into the clip database CDB, it roughly divides and there are a clip video data of a clip and clip management data for managing the clip video data as a result of a raw material clip. This term explains the management method of this clip management data.

[0189] Drawing 13 is the database for clip management data formed in the clip database CDB (mainly RAM21B), when the edit processing shown in drawing 7, drawing 8, and drawing 9 is directed. As shown in this drawing 13, the database for managing this clip management data is roughly divided, and, therefore, is constituted by a clip ID code, a clip name, an attribute, the pointer to image data, DEYURESHIYON, a high order link place ID code, a low order link place ID code, validity / invalid flag, and activity data.

[0190] A clip ID code is the identification number of the serial number automatically given to the order registered as a clip to the clip concerned. Therefore, the clip registered based on this clip ID code is discriminable.

[0191] the clip of the attribute of a clip is a mere raw material clip -- or it is data for identifying whether it is a clip as a result of being generated by editing a raw material clip. In the case of a raw material clip, the code "M" is registered into the place of the attribute of this clip, and the code "F" is registered when it is a result clip.

[0192] A clip name is a name for clip discernment given to the clip. In this example, by "001", the clip ID code shows the example which gave the identifier of "MC-001" automatically as that clip name, when the attribute of \*\*\*\*\* and a clip is "M." In addition, this clip name can also give the identifier of arbitration according to a user's idea. Incidentally, the clip name displayed on clip name display 33D of the library window 33 is this clip name.

[0193] The pointer to image data is a pointer in which the start address of the clip video data which consisted of 8 bytes of data and was recorded on the video disc recorder 5 is shown. In this edit system 1, since the clip video data is memorized by the video disc recorder 5 which has two or more hard disks, the pointer to this image data has pointed out the logical address of that hard disk array.

[0194] DEYURESHIYON is a time code showing the playback period of the clip video data of the clip. That is, it is a time code showing the time amount from the beginning of the clip video data to an end.

[0195] A high order link place ID code is a clip ID code of the clip linked as a high order clip to the clip. For example, since the clip ID code links raw material clip MC-001 whose a clip ID code is "001" to clip FC-008 the result of "008", as a result, the clip ID code "008" of clip FC-008 is registered as a high order link place ID code.

[0196] in addition, the top clip -- in the case of the clip which does not have a high order clip for an intermediary \*\*\*\* reason, "000" is registered as a high order link place ID code. For example, for \*\*\*\*\* in which join clip FC-010 have a high order clip, and this reason, "000" is registered as a high order link place ID code. If a high order link place ID code is "000" by this, it can grasp easily that it is the top clip.

[0197] A low order link place ID code is a clip ID code of the clip linked as a low order clip to the clip. For example, as a result of a clip ID code's being "008", raw material clip MC-001, MC-002, and MC-003 link to clip FC-008 as a low order clip, respectively. In that case, raw material clip MC-001 are specified as the 3rd layer L3, raw material clip MC-002 are specified as the 2nd layer L2, and raw material clip MC-003 are specified as the 1st layer L1. Therefore, "003" is registered as a clip ID code of the clip specified as \*\*\*\*\* and the 1st layer L1 with the low order clip of result clip FC-008. "002" is registered as a clip ID code of the clip specified as \*\*\*\*\* and the 2nd layer L2 with the low order clip of result clip FC-008. "001" is registered as a clip ID code of the clip specified as \*\*\*\*\* and the 3rd layer L3 with the low order clip of result clip FC-008. In addition, it can grasp easily which low order clip is specified as which layer by having matched with the layer the low order clip linked to low order in this way, and having managed it.

[0198] In addition, in the case of a clip without a low order clip, no data are registered as a low order link place ID code. for example, \*\*\*\*\* which has a low order clip since raw material clip MC-001 are a mere raw material clip and this sake -- as a low order link place ID code -- a blank -- intermediary \*\*\*\*.

[0199] Validity / invalid flag is flags with which the clip expresses whether it is an effective (Enable) clip or it is an invalid (Disable) clip. In this case, if the clip is effective, the code of "E" will be registered, and the code of "D" will be registered if the clip is invalid. When the content of edit specified is incidentally performed and the clip video data as an edit result is generated Although the content of edit was once performed when the clip video data was not generated and the clip video data was generated since an effective flag was registered and the content of edit was not performed The flag of an invalid is registered when the actual content of edit and the clip video data are not in agreement, since the clip from which the content of edit and their raw material are got after that was changed. In addition, if the database for these clip management data is referred to by having such validity / an invalid flag as clip management data, it can grasp easily whether a clip is effective or invalid.

[0200] Activity data are data in which the content of edit specified to the clip is shown. Therefore, although a certain activity data are registered to clip FC-008, FC-009, and FC-010 as a result of being generated by edit therefore, to raw material clip MC-001 to raw material clip MC-007 which therefore are not generated, nothing is registered into edit as activity data.

[0201] As shown in this drawing 13 , activity data are roughly divided and are divided into a module ID code, editing point data, and image-processing data. Among these, a module ID code is an identification number which shows the module used in the editing task which creates a clip as a result. In this case, if the synthetic module CM was used, the code of "C" will be registered, if the special effect module SM was used, the code of "S" will be registered, and the code of "E" will be registered if the edit module EM was used.

[0202] Moreover, editing point data are data which consist of a time code corresponding to all the editing points specified to the clip as a result, and the editing point of those. Moreover, image-processing data consist of synthetic (composite) data, special effect (special effect) data, and edit (edit) data. Among these, complex data is data which consist of parameter value specified in synthetic processing, special effect data are data which consist of parameter value specified in special effect processing, and edit data are data which consist of parameter value specified in edit processing.

[0203] In addition, when the content of edit processing is corrected, the content of these clip management data is rewritten at any time based on the new content of edit. However, it is not eliminated, but another clip ID code and a clip name are added, and the past clip management data is held as an object for backup. For example, when the content of the special effect processing to result clip FC-009 is corrected, as shown in drawing 14 , the clip management data before correction is held as

backup.

[0204] That is, when new special effect processing is directed to result clip FC-009, based on the content of new special effect processing, the editing point data after correction and the special effect data after correction are generated, and it registers with the place (namely, place whose clip ID data are "009") this [ whose ] is a clip before correction, respectively as activity data. The editing point data before the correction registered as activity data on the other hand before new special effect processing was directed, and the special effect data before correction are registered into another field in a database as clip management data for backup based on those identification information, after a clip ID code "009BK1" and a clip name "FC-009BK1" are newly assigned. However, validity / invalid flag is corrected to the code of "D" which shows an invalid in the clip management data registered as backup.

[0205] Thus, even when clip FC-009 are not pleasing by leaving the clip management data before correction as backup the result after correction, based on the clip management data before the correction which it has left as backup, it can return to clip FC-009BK1 easily the result before correction.

[0206] An example is raised and explained below about the editing point data registered as activity data mentioned above here, complex data, special effect data, and edit data. Editing point data are first explained using drawing 15 - drawing 17 .

[0207] When synthetic processing as shown in drawing 7 is directed to result clip FC-008, editing point data as shown in drawing 15 are registered. They are the time code of the Inn point which shows the start location of \*\*\*\*\* and its low order clip by the data for specifying which part editing point data use for the clip video data of a high order clip among the clip data of a low order clip as shown in this drawing 15 , the time code of the out point which shows that end location, and intermediary \*\*\*\* [ from ] .

[0208] the time code of the Inn point of raw material clip MC-003 specified as the 1st layer L1 as shown in drawing 7 -- a time-line t3 top -- setting -- "00:00:31:02" -- the location of an intermediary cage and its Inn point -- a result -- clip FC- the time code "00:00:00:00" is supported on the time line t8 of 008. Therefore, in editing point data, as shown in drawing 15 , it matches and registers with the place the time code "00:00:00:00" of result clip FC-008 and whose time code "00:00:31:02" of the Inn point of raw material clip MC-003 are the editing points EP 1. moreover, the time code of the out point of raw material clip MC-003 specified as the 1st layer L1 as shown in drawing 7 -- a time-line t3 top -- setting - "00:05:18:02" -- the location of an intermediary cage and its out point -- a result -- clip FC- the time code "00:04:47:00" is supported on the time line t8 of 008. Therefore, in editing point data, as shown in drawing 15 , it matches and registers with the place the time code "00:04:47:00" of result clip FC-008 and whose time code "00:05:18:02" of the out point of raw material clip MC-003 are the editing points EP 8. The editing point of raw material clip MC-003 therefore specified as the time code of this Inn point and an out point as the 1st layer L1 will be decided.

[0209] Similarly, it matches with the time code of result clip FC-008, respectively, and the time code "00:00:51:00" of the Inn point of raw material clip MC-002 specified as the 2nd layer L2 and an out point and "00:03:04:20" are registered, as shown in drawing 15 . Similarly, it matches with the time code of result clip FC-008, respectively, and the time code "00:01:40:03" of the Inn point of raw material clip MC-001 specified as the 3rd layer L3 and an out point and "00:02:45:48" are registered, as shown in drawing 15 .

[0210] Moreover, when special effect processing as shown in drawing 8 is directed to result clip FC-009, editing point data as shown in drawing 16 are registered. In the case of special effect processing, as shown in this drawing 16 , in editing point data, the time code of a low order clip and the time code of a high order clip also match \*\*\*\*\* , and it is registered. That is, it matches with the time code of result clip FC-009, and the time code "00:10:12:00" of the Inn point of raw material clip MC-004 specified as the 1st layer L1 and an out point and "00:12:18:00" are registered, as shown in drawing 16 .

[0211] Moreover, when edit processing as shown in drawing 9 is directed to result clip FC-010, editing point data as shown in drawing 17 R> 7 are registered. In the case of edit processing, as shown in this drawing 17 , in editing point data, the time code of a low order clip and the time code of a high order clip also match \*\*\*\*\* , and it is registered. As a result of being specified as the 1st layer L1, namely,

the time code "00:01:01:20" of the Inn point of clip FC-008 and an out point and "00:04:43:00" As shown in drawing 17 , while matching with the time code of result clip FC-010 and being registered As a result of being specified as the 2nd layer L2, it matches with the time code of result clip FC-010, and the time code "00:00:00:50" of the Inn point of clip FC-009 and an out point and "00:02:06:00" are registered, as similarly shown in drawing 17 .

[0212] Then, complex data is explained using drawing 18 . Complex data is data showing the synthetic ratio (gain) when compounding the video data of the clip specified as each layer, and is made as [ take / as a value / the value to "0" - "100" ]. In addition, if the value of complex data is "0", it means compounding the video data to compound at 0% of a rate, and the lower layer video data means that it is thoroughly transparent and visible in this case. Moreover, if the value of complex data is "50", it means compounding the video data to compound at 50% of a rate, and the video data of a lower layer [ the rate like one half ] means that it is transparent and visible in this case. the video data which will be compounded if the value of complex data is furthermore "100" -- 100 It means compounding at a rate of percent and the lower layer video data means that hide thoroughly and it is not visible in this case.

[0213] The example of complex data is shown in drawing 18 here. This drawing 18 is the database of the complex data generated when complex data (gain) was specified using the parameter setting-out window 35 shown in drawing 10 , after specifying synthetic processing as shown in drawing 7 .

[0214] If gain "100" is specified in the location of the editing point EP 1, and the location of the editing point EP 8 to raw material clip MC-003 specified to the 1st layer L1, gain "100" will be registered into the column corresponding to the editing point EP 1 and the editing point EP 8 as shown in this drawing 18 . Moreover, since the linear interpolation based on the value is made using the editing points EP1 and EP8 concerned as a key point between the editing point EP 1 and the editing point EP 8, gain "100" is registered automatically ("--" shows among drawing that the interpolation value is registered).

[0215] Moreover, raw material clip MC-002 specified to the 2nd layer L2 are received. If gain "59" is specified in the location of the editing point EP 2, gain "100" is specified in the location of the editing point EP 3 and gain "0" is specified in the location of the editing point EP 6, as shown in this drawing 18 Gain "59", "100", and "0" are registered into the column corresponding to the editing points EP2, EP3, and EP6 in order, respectively. Also in this case, the linear interpolation based on that value is made using the editing points EP2, EP3, and EP6 concerned as a key point between the editing point EP 2 and the editing point EP 3 and between the editing point EP 3 and the editing point EP 6, and a gain value which continues linearly is registered automatically. Moreover, raw material clip MC-001 specified to the 3rd layer L3 are received. If gain "100" is specified in the location of the editing point EP 4, gain "67" is specified in the location of the editing point EP 5 and gain "51" is specified in the location of the editing point EP 7, as shown in this drawing 18 Gain "100", "67", and "51" are registered into the column corresponding to the editing points EP4, EP5, and EP7 in order, respectively. Also in this case, similarly, the linear interpolation based on that value is made from the editing point EP 4, using the editing points EP4, EP5, and EP7 concerned as a key point between the editing point EP 5, the editing point EP 5, and the editing point EP 7, and a gain value which continues linearly is registered automatically.

[0216] If such complex data is registered in this way and an editing task is performed, while the value of complex data will be switched one by one to the timing of each editing point It is switched to the value interpolated between each editing point one by one. The result, The video image of raw material clip MC-002 specified by the layer L2 from the event of the editing point EP 2 on the video image of raw material clip MC-003 specified as the layer L1 appears gradually. In a video image with which the video image of raw material clip MC-002 diminishes gradually after the editing point EP 3, \*\*\*\*\*, And a video image with which the video image of raw material clip MC-001 specified as the layer L3 at the event of the editing point EP 4 appears, and the video image of raw material clip MC-001 diminishes gradually after that can be acquired.

[0217] Then, special effect data are explained using drawing 19 . Therefore, special effect data are constituted at the effect ID data showing the class of special effect processing fundamentally performed to the clip for edit, and its each parameter value of the specified special effect processing and period

which performs the special effect processing.

[0218] The example of special effect data is shown in drawing 19 here. This drawing 19 is the database of the special effect data generated when a parameter setup was carried out using the parameter setting-out window 42 shown in \*\*\*\*\* and drawing 11 about the three-dimension image transformation shown in drawing 8.

[0219] In this drawing 19, it is the effect identification number assigned to three-dimension image transformation, and, as for "1025" registered as effect ID data, it turns out that three-dimension image transformation is therefore specified as this effect identification number "1025" as special effect processing. Moreover, "Loc X", "Loc Y", and "Loc Z" show the location (X, Y, Z) which is the parameter of three-dimension image transformation. "Rot X", "Rot Y", and "Rot Z" show the hand of cut (X, Y, Z) which is the parameter of three-dimension image transformation. "Asp" shows the aspect ratio which is the parameter of three-dimension image transformation, "Skew" shows the skew which is the parameter of three-dimension image transformation, and "Pers" shows the perspective value which is the parameter of three-dimension image transformation. as the period when it applies to the editing point EP 7 at, and is specified as it from the editing point EP 2 at, and three-dimension image transformation is specified by this as these parameters are shown in drawing 19 -- the editing point EP 2 -- a start point, and an intermediary cage and the editing point EP 7 -- an ending point -- intermediary \*\*\*\* -- things are understood easily. In addition, if the editing point data of drawing 16 explained previously are referred to, the concrete value of the start point of three-dimension image transformation and an ending point, i.e., a time code, can be grasped easily.

[0220] A parameter "Loc X" is received in the parameter setting-out window 42 shown in drawing 11 here. By the way, the editing points EP2, EP4, EP6, and EP7, respectively A coordinate value "0", Assignment of "0", "-1.6", and "-1.6" registers a coordinate value "0", "0", "-1.6", and "-1.6" into the column corresponding to the editing points EP2, EP4, EP6, and EP7, respectively, as shown in this drawing 19. In this case, from the editing point EP 2, the linear interpolation based on that value is made from the editing point EP 4 and the editing point EP 4, using the editing points EP2, EP4, EP6, and EP7 concerned as a key point between the editing point EP 6, the editing point EP 6, and the editing point EP 7, and a coordinate value which continues linearly is registered automatically.

[0221] the same -- a parameter "Loc Y" -- receiving -- the editing points EP2, EP6, and EP7, if a coordinate value "0", "0", and "+2" are specified by the way, respectively The coordinate value corresponding to the column corresponding to the editing points EP2, EP6, and EP7 is registered. To a parameter "Loc Z", if a coordinate value "0", "+2.2", and "+2.2" are specified by the way, respectively, the coordinate value corresponding to the column of the editing points EP2, EP6, and EP7 of the editing points EP2, EP6, and EP7 will be registered.

[0222] Moreover, to a parameter "Rot X", if an angle of rotation "0", "-180", and "-102" are specified by the way, respectively, the angle of rotation corresponding to the column corresponding to the editing points EP2, EP5, and EP7 of the editing points EP2, EP5, and EP7 will be registered. In addition, in this case, since interpolation by the spline curve is set up, the value which carries out \*\*\*\*\* continuation is automatically registered into a spline curve from the editing point EP 2, respectively between the editing point EP 5, the editing point EP 5, and the editing point EP 7. In addition, especially about the inside \*\*\*\* parameter "Rot Y" of assignment, "Rot Z", "Asp", "Skew", and "Pers", "0" is automatically registered as a default.

[0223] If the parameter about such three-dimension image transformation is registered in this way and an editing task is performed, while the value of a parameter will be switched one by one to the timing of each editing point, a video image which moves in a three-dimension space top and goes can be acquired being switched to the value interpolated between each editing point one by one, consequently rotating focusing on the X-axis.

[0224] Then, edit data are explained using drawing 20. Therefore, edit data are constituted at the effect ID data showing the class of transition effect fundamentally given to the clip for edit, the parameter value about the specified transition effect, and the period that gives the transition effect.

[0225] The example of edit data is shown in drawing 20 here. This drawing 20 is the database of the edit

data generated when a parameter setup was carried out using the parameter setting-out window 52 which specified wipe processing as shown in drawing 9 R> 9 as a transition effect, and was shown in drawing 12.

[0226] the time of "0001" registered as effect ID data switching from the image of the 1st video data to the image of the 2nd video data in this drawing 20 -- the right-hand side from the left-hand side of a screen -- \*\* -- it is the effect identification number assigned to wipe processing which switches once, and means that wipe processing of this kind is therefore specified as this effect identification number "0001" as a transition effect.

[0227] in addition, when the effect identification number "1300" is registered as effect ID data It means that wipe processing of a class which switches once is specified. the time of switching from the image of the 1st video data to the image of the 2nd video data -- the center from the ends of a screen -- \*\* -- When the effect identification number "2123" is registered as effect ID data, it means that the BEJI turn processing which switches by sensibility to which the image of the 1st video data turns over a page exactly is specified.

[0228] Moreover, "Angle" is a parameter which shows the include angle of a wipe pattern, "Aspect" is a parameter which shows the aspect ratio of the wipe pattern of a transition effect, and "H-Mod" and "V-Mod" are [ "Speed" is a parameter which shows a change-over rate, and ] parameters which show fluctuation of a wipe pattern, respectively. as the period when it applies to the editing point EP 4 at, and is specified as it from the editing point EP 2 at, and wipe processing is specified by this as these parameters are shown in drawing 20 -- the editing point EP 2 -- a start point, and an intermediary cage and the editing point EP 4 -- an ending point -- intermediary \*\*\*\* -- things are understood easily. In addition, if the editing point data of drawing 17 explained previously are referred to, the concrete value of the start point of wipe processing and an ending point, i.e., a time code, can be grasped easily.

[0229] In the parameter setting-out window 52 shown in drawing 12 here, to a parameter "Aspect", if a value "0" and "+25" are specified by the way, respectively, as shown in this drawing 20, the value corresponding to the column corresponding to the editing points EP2 and EP4 of the editing points EP2 and EP4 will be registered, respectively. In this case, the linear interpolation based on that value is made using the editing points EP2 and EP4 concerned as a key point between the editing point EP 2 and the editing point EP 4, and a value which continues linearly is registered automatically.

[0230] Moreover, to a parameter "Speed", if a value "20", "20", and "100" are specified by the way, respectively, as shown in this drawing 20, the value corresponding to the column corresponding to the editing points EP2, EP3, and EP4 of the editing points EP2, EP3, and EP4 will be registered, respectively. Also in this case, similarly, the linear interpolation based on that value is made from the editing point EP 2, using the editing points EP2, EP3, and EP4 concerned as a key point between the editing point EP 3, the editing point EP 3, and the editing point EP 4, and a value which continues linearly is registered automatically.

[0231] On the other hand, to a parameter "Angle", if a value "0", "+180", and "-180" are specified by the way, respectively, as shown in this drawing 20, the value corresponding to the column corresponding to the editing points EP2, EP3, and EP4 of the editing points EP2, EP3, and EP4 will be registered, respectively. In this case, since interpolation by the spline curve is set up, the value which carries out \*\*\*\*\* continuation is automatically registered into a spline curve from the editing point EP 2, respectively between the editing point EP 3, the editing point EP 3, and the editing point EP 4. In addition, especially about the inside \*\*\*\* parameter "H Mod" of assignment and "V Mod", "0" is automatically registered as a default.

[0232] it be \*\*\*\*\* to acquire a video image of a transition effect it be switch to the value interpolated between each edit point one by one, consequently a change-over rate carry out [ image ] sequential change, and go to the configuration and include angle list of a wipe pattern, while the value of a parameter will be switch one by one to the timing of each edit point, if the parameter about such wipe processing be register in this way and an editing task be perform.

[0233] (6) The various procedure in an edit system, then this term explain the operations sequence of each processing in this edit system 1 using a flow chart. In addition, therefore, all the contents of the



actual synthetic processing.

[0242] Moreover, starting processing of the special effect module SM in a step SP 10 is concretely shown in drawing 24 . If starting of the special effect module SM is directed, CPU21 will display GUI of the special effect module SM on display 2B of a workstation 2 first in the ON \*\*\*\* step SP 41 from a step SP 40. In the following step SP 42 CPU21 When it judges whether starting of the special effect module SM was directed through the previous step SP 12 and starting of the special effect module SM is directed through a step SP 12 The content of special effect is displayed in read-out and the time-line window 41 of GUI for special effect modules mentioned above based on the clip management data registered into the clip database CDB in the content of special effect of a clip as a result of progressing to a step SP 43 and being specified as it.

[0243] On the other hand, if it is not starting through a step SP 12 but new starting as a result of the decision in a step SP 42, CPU21 will progress to a step SP 44, and will make registration preparations of clip management data in preparation for the special effect processing newly performed from now on. It prepares for the special effect processing newly directed concrete from now on, and the area which registers clip management data is secured on the clip database CDB. If processing of these step SP 43 or a step SP 44 is performed, CPU21 will progress to the following step SP 45, and will shift to actual special effect processing.

[0244] The detail of the edit processing shown in the step SP 25 of drawing 22 here is shown in drawing 25 . In addition, although a graphic display is omitted here, the synthetic processing shown in the step SP 35 of drawing 23 and the special effect processing shown in the step SP 45 of drawing 24 are almost the same as the edit processing shown in this drawing 25 , and that content of processing only replaces that difference with synthetic processing or special effect processing.

[0245] As shown in drawing 25 , CPU21 The input which directs edit processing in the ON \*\*\*\* step SP 51 from a step SP 50 first judges [ consequently ] whether it is \*\*\*\*\* (for example, the actuation which used the actuation or the parameter setting-out window 52 which used the time-line window 51 judges whether it is \*\*\*\*\*). To a \*\*\*\*\* case, such an input progresses to a step SP 52, creates the edit data corresponding to an input, and sets [ case ] the validity / invalid flag of a clip as the clip database CDB suitably by making it into clip management data at an invalid as a result of [ its ] writing. In addition, it is intermediary \*\*\*\* [ as ] which does not only overwrite CPU21, but assigns another clip ID code to a \*\*\*\*\* case to the clip management data before correction, and is held to another field to it by the input for reading a clip, as a result of already being registered, and correcting the content. Thereby, the clip management data before correction can also be read later.

[0246] After processing of this step SP 52 finishes, CPU21 progresses to the following step SP 53. In a step SP 53, CPU21 judges whether as a result of creating at a step SP 52, the clip of the high order to a clip exists by referring to the high order link place ID code of clip management data. Consequently, when there is no clip of a high order and the clip of return and a high order exists in a step SP 51, it progresses to a step SP 54, all validity / invalid flags of the clip management data which manages the clip of the high order are set as an invalid, and it returns to a step SP 51 after that. In addition, when progressing to a step SP 54, it is the case where in almost all cases a clip is corrected as a result of already being registered. Moreover, the clips of a high order are all clips, as a result of considering further not only the high order clip that considers a clip as a low order clip as a result of creating at a step SP 52 but the high order clip as a low order clip and using the clip as a raw material as a result at least also including a clip (this is also henceforth called a related clip).

[0247] For example, it considers as \*\*\*\*\* at relation as the relation of a clip shows to drawing 26 as a result of each already registered raw material clip. That is, therefore result clip FC-G is generated by raw material clip MC-G1 and MC-G2, and, as a result, result clip FC-E is generated considering clip FC-G, raw material clip MC-E1, and MC-E2 as a raw material. Moreover, as a result, result clip FC-C is generated considering clip FC-E and raw material clip MC-C1 as a raw material.

[0248] Moreover, result clip FC-F is generated considering raw material clip MC-F1, MC-F2, and MC-F3 as a raw material, and, as a result, result clip FC-D is generated considering clip FC-E as a raw material as a result of clip FC-F, raw material clip MC-D1, and MC-D2. moreover, a result -- clip FC-B

-- a result -- clip FC-D and FC-C, and raw material clip MC-B1 -- as a raw material -- generating --  
having -- \*\*\*\* -- a result -- clip FC-A -- a result -- clip FC-B -- as a raw material -- generating -- having  
-- \*\*\*\*

[0249] When there is relation during such a clip, in the limitation which does not once add correction especially after generating the clip video data of a result clip, respectively, the validity / invalid flag of the clip management data which manages these clips are usually set up effectively. However, although the validity / invalid flag of result clip FC-E are naturally changed into an invalid when correction is added, for example to the content of edit processing of result clip FC-E As a result of considering clip FC-E as a low order clip not only result clip FC-E but the result concerned, clip FC-C and FC-D, Clip FC-B and as a result of considering clip FC-C and FC-D as a low order clip the result concerned furthermore, and considering clip FC-B as a low order clip the result concerned further, validity / invalid flag is changed into an invalid also for all clip FC-A.

[0250] It returns to explanation of the flow chart again shown in drawing 25 . It progresses to the step SP 55 which the result of the decision in a step SP 51, especially the input of edit processing are made, and follows an inside \*\*\*\* case. In a step SP 55 CPU21 As a result of being displayed, when whether the clip was chosen as a result of being displayed on the video area of the time-line window 51 judged, and a clip is chosen The module (namely, the synthetic module CM or a special effect module (SM)) which created the clip as a result in a step SP 56 is started, as a result of being displayed, a clip is chosen, and it progresses to an inside \*\*\*\* case at a step SP 58. In addition, the detail of a step SP 56 is mentioned later.

[0251] In a step SP 58, it progresses to a step SP 59, rerun processing is performed, an rerun command is inputted, and CPU21 returns to an inside \*\*\*\* case through a step SP 26 at the original flow chart, when it judges whether the rerun command was inputted and an rerun command is inputted. In addition, therefore the BIYUU carbon button or all BIYUU carbon button currently displayed on the GUI screen as the rerun command said here is clicked by mouse 2D, and it means that directions of BIYUU or all BIYUU were inputted. At the time of BIYUU or all BIYUU, the content of edit processing specified is performed actually, and since the video clip data of a clip are generated as a result, such an identifier is attached.

[0252] Concrete processing (namely, starting processing of a module) of the step SP 56 explained previously here is shown in drawing 27 R> 7. When a clip is chosen as a result of being displayed as shown in this drawing 27 , CPU21 reads the clip management data of a clip from a step SP 60 in the ON \*\*\*\* step SP 61, as a result of [ that ] being chosen. Next, with reference to the module ID code registered into the clip management data, in the following step SP 63, CPU21 starts the module (namely, the synthetic module CM or a special effect module (SM)) corresponding to the module ID code, and, as a result, displays the content of edit processing of a clip on the time-line window on GUI in a step SP 62.

[0253] Then, concrete processing (namely, rerun processing) of the step SP 59 explained previously is shown in drawing 28 . However, therefore in this drawing 28 , all of result clip FC-E, FC-D, FC-C, FC-B, and FC-A shall be made with the invalid processing of the step SP 54 which there shall be relation during a clip as shown in drawing 26 , and was explained previously.

[0254] As shown in this drawing 28 , when an rerun command is directed, CPU21 forms a stack memory on RAM21B first in the ON \*\*\*\* step SP 71 from a step SP 70, and as a result of being in that stack memory on a clip tree at the most significant, it pushes the clip management data of a clip. For example, in the example shown in drawing 26 , at least to Mogami, result clip FC-A is that of intermediary \*\*\*\*, and, as a result, pushes the clip management data of clip FC-A at a stack memory. In addition, a push said here means overlaying data in stack memory space.

[0255] In the following step SP 72, CPU21 judges whether the contents of the stack memory are empty. In now, in a step SP 71, since clip management data was pushed to the stack memory, data exist, and a negative result is obtained. For this reason, CPU21 progresses to the following step SP 74.

[0256] In a step SP 74, CPU21 carries out pop [ of the clip management data ] by one clip from a stack memory, and judges whether the clip is effective based on the validity / invalid flag of the clip

management data. In the example shown in drawing 26 , since result clip FC-A is made into the invalid, a negative result is obtained and it progresses to a step SP 75. In addition, it says reading the data which are said here and which are overlaid in stack memory space as it is pop from the top thing.

[0257] In a step SP 75, CPU21 judges whether as a result, all the low order clips of a clip are validity based on the clip management data read at the previous step SP 74. In this case, CPU21 judges whether all low order clips are validity by judging a low order clip based on the clip ID code registered there with reference to the low order link place ID code registered into the clip management data of a clip as a result, and referring to the validity / invalid flag of that low order clip from a clip database. In the example shown in drawing 26 , as a result of being the low order clip of result clip FC-A, clip FC-B is that of an invalid and intermediary \*\*\*\*, and a negative result is obtained and it progresses to the following step SP 77.

[0258] In a step SP 77, CPU21 pushes the clip management data of a clip to a stack memory again, as a result of carrying out pop like the point, and it progresses to the following step SP 78. In the example shown in drawing 26 , the clip management data of result clip FC-A will be again pushed to a stack memory. In a step SP 78, CPU21 pushes the clip management data of the clip made into the invalid among the low order clips of a clip as a result of re-pushing at a step SP 77 to one stack memory. In the example shown in drawing 26 , since low order clip FC-B of result clip FC-A is made into the invalid, as a result, the clip management data of clip FC-B is pushed by the stack memory.

[0259] Next, CPU21 judges again whether the inside of a stack memory is empty in return and here to a step SP 72. Since clip management data exists in a stack memory in now, a negative result is obtained and it progresses to the following step SP 74. At a step SP 74, CPU21 carries out pop [ of the clip management data ] by one clip from a stack memory, and judges whether as a result, a clip is effective based on the validity / invalid flag in the clip management data. In the example shown in drawing 26 , although reading appearance of the clip management data of result clip FC-B is carried out, since clip FC-B is made into the invalid as a result, a negative result is obtained and it progresses to the following step SP 75.

[0260] In a step SP 75, CPU21 judges whether as a result, all the low order clips of a clip are validity based on the clip management data read at the previous step SP 74. In the example of drawing 26 , since clip FC-C and FC-D are made into the invalid as a result of being the low order clip of result clip FC-B, a negative result is obtained and it progresses to the following step SP 77.

[0261] In a step SP 77, CPU21 pushes the clip management data of a clip to a stack memory again, as a result of carrying out pop like the point, and it progresses to the following step SP 78. In the example of drawing 26 , the clip management data of result clip FC-B is re-pushed. In the following step SP 78, CPU21 pushes the clip management data of the clip made into the invalid among the low order clips of a clip as a result of re-pushing at a step SP 77 to one stack memory. In the example of drawing 26 , the clip management data of result clip FC-C is pushed.

[0262] Next, CPU21 judges again whether the inside of a stack memory is empty in return and here to a step SP 72. In now, since it is not empty, a negative result is obtained, and it progresses to the following step SP 74. In a step SP 74, CPU21 carries out pop [ of the clip management data ] by one clip from a stack memory, and it judges whether as a result, a clip is effective based on the clip management data. In the example of drawing 26 , although reading appearance of the clip management data of result clip FC-C is carried out, since clip FC-C is invalid as a result, a negative result is obtained and it progresses to the following step SP 75.

[0263] In a step SP 75, CPU21 judges whether as a result, all the low order clips of a clip are validity based on the clip management data read at the previous step SP 74. In the example of drawing 26 , since clip FC-E is made into the invalid as a result of being the low order clip of result clip FC-C, a negative result is obtained and it progresses to the following step SP 77.

[0264] In a step SP 77, CPU21 pushes the clip management data of a clip to a stack memory again, as a result of carrying out pop like the point, and it progresses to the following step SP 78. In the example of drawing 26 , the clip management data of result clip FC-C is re-pushed. In the following step SP 78, CPU21 pushes the clip management data of the clip made into the invalid among the low order clips of a

clip as a result of re-pushing at a step SP 77 to one stack memory. In the example of drawing 26 , the clip management data of result clip FC-E is pushed.

[0265] Next, CPU21 judges again whether the inside of a stack memory is empty in return and here to a step SP 72. In now, since it is not empty, a negative result is obtained, and it progresses to the following step SP 74. In a step SP 74, CPU21 carries out pop [ of the clip management data ] by one clip from a stack memory, and it judges whether as a result, a clip is effective based on the clip management data. In the example of drawing 2626 , although reading appearance of result clip FC-E is carried out, since clip FC-E is invalid as a result, a negative result is obtained and it progresses to the following step SP 75.

[0266] In a step SP 75, CPU21 judges whether as a result, all the low order clips of a clip are validity based on the clip management data read at the previous step SP 74. In the example of drawing 26 , since all of clip MC-E1 and MC-E2 which are the low order clip of result clip FC-E, and FC-G are validity, an affirmation result is obtained and it progresses to a step SP 76.

[0267] In a step SP 76, as a result, CPU21 changes effectively the validity / invalid flag of the clip management data to a clip while, creating the clip video data of a clip as a result by performing edit processing using the clip video data of the clip specified as a raw material based on the activity data registered into clip management data. In the example of drawing 26 , while creating the clip video data of result clip FC-E by performing edit processing using clip FC-G, MC-E1, and MC-E2 which are specified as a raw material, the validity / invalid flag of result clip FC-E are changed effectively.

[0268] Next, CPU21 judges again whether the inside of a stack memory is empty in return and here to a step SP 72. In now, since it is not empty, a negative result is obtained, and it progresses to the following step SP 74. In a step SP 74, CPU21 carries out pop [ of the clip management data ] by one clip from a stack memory, and it judges whether as a result, a clip is effective based on the clip management data. In the example of drawing 2626 , although reading appearance of the clip management data of result clip FC-C is carried out, since clip FC-C is invalid as a result, a negative result is obtained and it progresses to the following step SP 75.

[0269] In a step SP 75, CPU21 judges whether as a result, all the low order clips of a clip are validity based on the clip management data read at the previous step SP 74. In the example of drawing 26 , since clip FC-E and MC-C1 which are the low order clip of result clip FC-C are confirmed respectively, an affirmation result is obtained and it progresses to a step SP 76.

[0270] In a step SP 76, as a result, CPU21 changes effectively the validity / invalid flag of the clip management data to a clip while, creating the clip video data of a clip as a result by performing edit processing using the clip video data of the clip specified as a raw material based on the activity data registered into clip management data. In the example of drawing 26 , while edit processing which used clip FC-E and MC-C1 is performed and the clip video data of result clip FC-C is created, as a result, the validity / invalid flag of clip FC-C are changed effectively.

[0271] Next, CPU21 judges again whether the inside of a stack memory is empty in return and here to a step SP 72. In now, since it is not empty, it is obtained a negative result, and it progresses to the following step SP 74. In a step SP 74, CPU21 carries out pop [ of the clip management data ] by one clip from a stack memory, and it judges whether as a result, a clip is effective based on the clip management data. In the example of drawing 2626 , although reading appearance of the clip management data of result clip FC-B is carried out, since clip FC-B is invalid as a result, a negative result is obtained and it progresses to the following step SP 75.

[0272] In a step SP 75, CPU21 judges whether as a result, all the low order clips of a clip are validity based on the clip management data read at the previous step SP 74. In the example of drawing 26 , since clip FC-D is made into the invalid as a result of being a low order clip, a negative result is obtained and it progresses to a step SP 77.

[0273] In a step SP 77, similarly, as a result, CPU21 pushes the clip management data of a clip to a stack memory again, is invalid in the following step SP 78, and pushes the clip management data of a \*\*\*\*\* low order clip to a stack memory.

[0274] Next, CPU21 judges again whether the inside of a stack memory is empty in return and here to a step SP 72. In now, since it is not empty, a negative result is obtained, and it progresses to the following

step SP 74. In a step SP 74, CPU21 carries out pop [ of the clip management data from a stack memory ] by one clip, and it judges whether as a result, a clip is effective based on the clip management data. In the example of drawing 26 , although reading appearance of result clip FC-D is carried out, since clip FC-D is invalid as a result, a negative result is obtained and it progresses to the following step SP 75.

[0275] In a step SP 75, CPU21 judges whether as a result, all the low order clips of a clip are validity based on the clip management data read at the previous step SP 74. In the example of drawing 26 , since clip FC-E, FC-F, MC-D1, and MC-D2 which are the low order clip of result clip FC-D are validity altogether, an affirmation result is obtained and it progresses to a step SP 76.

[0276] In a step SP 76, as a result, CPU21 changes effectively the validity / invalid flag of the clip management data to a clip while, creating the clip video data of a clip as a result by performing edit processing using the clip video data of the clip specified as a raw material based on the activity data registered into clip management data. In the example of drawing 26 , while edit processing which used clip FC-E, FC-F, MC-D1, and MC-D2 is performed and the clip video data of result clip FC-D is created, as a result, the validity / invalid flag of clip FC-D are changed effectively.

[0277] Next, CPU21 judges again whether the inside of a stack memory is empty in return and here to a step SP 72. In now, since it is not empty, it is obtained a negative result, and it progresses to the following step SP 74. In a step SP 74, CPU21 carries out pop [ of the clip management data ] by one clip from a stack memory, and it judges whether as a result, a clip is effective based on the clip management data. In the example of drawing 2626 , although reading appearance of the clip management data of result clip FC-B is carried out, since clip FC-B is invalid as a result, a negative result is obtained and it progresses to the following step SP 75.

[0278] In a step SP 75, CPU21 judges whether as a result, all the low order clips of a clip are validity based on the clip management data read at the previous step SP 74. In the example of drawing 26 , since clip FC-C and FC-D are effective as a result of being a low order clip, an affirmation result is obtained and it progresses to the following step SP 76.

[0279] In a step SP 76, as a result, CPU21 changes effectively the validity / invalid flag of the clip management data to a clip while, creating the clip video data of a clip as a result by performing edit processing using the clip video data of the clip specified as a raw material based on the activity data registered into clip management data. In the example of drawing 26 , while edit processing which used clip FC-C and FC-D is performed and the clip video data of result clip FC-B is created, as a result, the validity / invalid flag of clip FC-B are changed effectively.

[0280] Next, CPU21 judges again whether the inside of a stack memory is empty in return and here to a step SP 72. In now, since it is not empty, it is obtained a negative result, and it progresses to the following step SP 74. In a step SP 74, CPU21 carries out pop [ of the clip management data ] by one clip from a stack memory, and it judges whether as a result, a clip is effective based on the clip management data. In the example of drawing 26 , although reading appearance of the clip management data of result clip FC-A is carried out, since clip FC-A is invalid as a result, a negative result is obtained and it progresses to the following step SP 75.

[0281] In a step SP 75, CPU21 judges whether as a result, all the low order clips of a clip are validity based on the clip management data read at the previous step SP 74. In the example of drawing 26 , since clip FC-B is effective as a result of being a low order clip, an affirmation result is obtained and it progresses to the following step SP 76.

[0282] In a step SP 76, as a result, CPU21 changes effectively the validity / invalid flag of the clip management data to a clip while, creating the clip video data of a clip as a result by performing edit processing using the clip video data of the clip specified as a raw material based on the activity data registered into clip management data. In the example of drawing 26 , while edit processing which used result clip FC-B is performed and the clip video data of result clip FC-A is created, as a result, the validity / invalid flag of clip FC-A are changed effectively.

[0283] Next, CPU21 is again judged to a step SP 72 in return and the no whose inside of a stack memory is empty here. since reading appearance even of all the clips is carried out by previous pop processing the top result in now -- the inside of a stack memory -- empty -- an intermediary cage and an

affirmation result are obtained. Therefore, CPU21 progresses to a step SP 73, and finishes rerun processing.

[0284] In addition, in a step SP 74, when it is judged that the clip of clip management data by which reading appearance was carried out from the stack memory is effective, it returns to a step SP 72. For example, a clip is effective the top result in a clip tree, and to a \*\*\*\*\* case, although clip management data is pushed by the stack memory by processing of a step SP 71, since an affirmation result is obtained by decision of the subsequent step SP 74, way rerun processing is immediately completed from an affirmation result being obtained by the step SP 72 return and here. Thus, the top result, when a clip is effective, rerun processing will be performed substantially.

[0285] What showed typically the content of the flow chart of rerun processing explained above here is shown in drawing 29. In the edit system 1 by this invention, the top result, clip FC-A is invalid, and it investigates whether at the time of \*\*\*\*\* , as a result of being the low order clip, clip FC-B is effective, is invalid, and investigates whether as a result, low order clip FC-C of clip FC-B is still more effective to a \*\*\*\*\* case. Consequently, result clip FC-C is invalid, it investigates whether as a result, low order clip FC-E of clip FC-C is still more effective in a \*\*\*\*\* case, as a result, clip FC-E is invalid, and it investigates whether as a result, low order clip FC-G of clip FC-E is still more effective to a \*\*\*\*\* case.

[0286] Consequently, if result clip FC-G is effective, as a result, the clip video data of a clip is transmitted, and as a result of being equivalent to a high order clip by rerunning edit processing based on the clip video data, the clip video data of clip FC-E will be created. Creation of the clip video data of result clip FC-E creates the clip video data of clip FC-C, as a result of being equivalent to a high order clip by next rerunning edit processing based on the clip video data. If the clip video data of result clip FC-C is created, it is going to rerun edit processing based on the clip video data next, but as a result of another side which is a low order clip, since clip FC-D is still invalid, it investigates whether as a result of being the low order clip of clip FC-D as a result, clip FC-E is effective.

[0287] When result clip FC-E is effective, as a result, the clip video data of clip FC-E is transmitted. Moreover, it investigates whether clip FC-F is effective as a result of another side which is the low order clip of result clip FC-D, and if effective, as a result, the clip video data of clip FC-F will also be transmitted. A transfer of the clip video data from low order clip FC-E and FC-F creates the clip video data of clip FC-D, as a result of being equivalent to a high order clip by rerunning edit processing based on those clip video datas. Next, creation of the clip video data of result clip FC-D creates the clip video data of clip FC-B, as a result of being equivalent to a high order clip by rerunning edit processing based on the clip video data. Next, creation of the clip video data of result clip FC-B creates the clip video data of clip FC-A, as a result of being equivalent to a high order clip by rerunning edit processing based on the clip video data.

[0288] Thus, in the edit system 1 by this invention, when the content of edit processing of result clip FC-E is corrected, for example, while, changing the flag for discernment of clip FC-E into an invalid as a result, as a result of linking to the high order rather than clip FC-E as a result, all the flags for discernment of clip FC-C, FC-D, FC-B, and FC-A are also changed into an invalid, and go. and when rerun processing is therefore specified as the select command of BIYUU or all BIYUU The top result, from clip FC-A, investigate whether \*\* or an intermediary clip is effective in a low-ranking clip, and it goes. If all the clips linked to low order reach the clip which is validity, while rerunning edit processing of the clip and changing the clip into an effective clip All the clips linked to the high order are changed into an effective clip by rerunning in order edit processing of the clip linked to the high order, and going rather than the clip. In this way, even if the operator does not remember the relation during a clip like before by performing such processing in the edit system 1 by this invention, the once created edit result is easily correctable.

[0289] (7) In actuation of an edit system, and the configuration beyond effectiveness, if this edit system 1 is started, a top menu will be displayed on display 2B of a workstation 2. An operator chooses the command of module starting of the request in this top menu, and starts a \*\*\*\*\* module to the editing task to be performed from now on. Starting of a module displays GUI for edit on display 2B of a

workstation 2.

[0290] For example, when the synthetic module CM is started, GUI as shown in drawing 10 is displayed on display 2B. In GUI for this synthetic processing, the time-line window 34 only for synthetic processings is displayed, if actuation according to the screen of this time-line window 34 is carried out and it goes, the clip which serves as a raw material easily can be specified, or desired synthetic processing can be specified. Since the clip registered as a clip database CDB is displayed on the clip tree window 31 or the library window 33 in this GUI in that case, \*\* which selects easily the raw material used for edit from the clips registered is made. Moreover, if the clip of the request chosen from the clip tree window 31 or the library window 33 is put on the video area in the time-line window 34, the raw material used for synthetic processing can be specified easily.

[0291] Moreover, if a parameter is set up and it goes, looking at a screen using the parameter setting-out window 35 displayed on the same GUI in setting up the parameter of the synthetic processing specified in the time-line window 34, a desired synthetic parameter can be set up. Moreover, in the parameter setting-out window 35, since the value of the set-up parameter is displayed by graph-like graphical display, if this graphical display is seen, an operator can grasp easily what kind of value was set up to what kind of timing. In addition, since the value of the parameter set up to the clip as a result is displayed on this parameter setting-out window 35 when a clip is read, as a result of already being registered, \*\*\*\*\* can also be easily grasped with the parameter set up in the past.

[0292] Moreover, in the clip tree window 31, since a clip tree which the relation of each clip registered into the clip database CDB understands is displayed, if this clip tree is seen, it can grasp easily considering what kind of clip as a raw material each clip is generated.

[0293] Moreover, if a clip is double-clicked as a result of being put on the video area in the time-line window 34, as a result, a \*\*\*\*\* module (namely, the synthetic module CM, the special effect module SM, or an edit module (EM)) will start automatically by the content of edit of a clip, and \*\*\*\*\* GUI will be displayed on the module on a screen. And as a result of [ the ] being chosen, the content of edit of a clip is displayed on the time-line window on the GUI. Thus, if a result clip is chosen on the time-line window 34, since a \*\*\*\*\* module will start automatically to a clip as a result, while the activity burden which becomes unnecessary to start the module with which an operator, as a result, investigates the content of edit of a clip specially, and corresponds, and starts an operator is mitigable, the module which corresponds promptly can be started.

[0294] Similarly, when the special effect module SM is started, GUI as shown in drawing 11 is displayed on display 2B. Also in GUI of this special effect processing, the time-line window 41 only for special effect is displayed, if actuation according to the screen of this time-line window 41 is carried out and it goes, the clip which serves as a raw material easily can be specified, or desired special effect processing can be specified. Moreover, also in GUI of this special effect processing, the clip tree window 31 and the library window 33 are formed, and the clip of the request registered into the clip database CDB by this can be easily chosen as a raw material.

[0295] Similarly, when the edit module EM is started, GUI as shown in drawing 12 is displayed on display 2B. Also in GUI of this edit processing, the time-line window 51 only for edit processings is displayed, if actuation according to the screen of this time-line window 51 is carried out and it goes, the clip which serves as a raw material easily can be specified, or desired edit processing can be specified.

[0296] Thus, in this edit system 1, if a desired raw material and the desired content of edit are specified and it goes, looking at GUI for every function displayed on display 2B of a workstation 2, a desired editing task can be performed easily. Moreover, in this edit system 1, all directions concerning an editing task can be inputted through a workstation 2, and even if an operator does not operate each device specially like before, an editing task can be performed easily.

[0297] In this way, in this edit system 1, while being able to perform an editing task at a high speed simply as compared with the former, a variety of raw materials registered into the clip database CDB can be edited, and a complicated and advanced video data can be obtained easily.

[0298] On the other hand, by this edit system 1, each clip as a raw material is managed by the layered structure based on the relation during a clip. That is, it grasps which clip links to which clip. Moreover,

when the content of edit is changed for an editing task after \*\*\*\*\*, while once making the clip into an invalid, the clip linked to the high order of the clip based on the relation during the clip is also made into an invalid. If an operator does not repeal them in search of the clip linked to the high order of the low order clip when the operator has memorized and managed the relation during each clip like before and a low-ranking clip is made into an invalid, \*\*\*\* in \*\*\*\* In the edit system 1 of this invention, since the clip linked to the high order is also automatically made into an invalid, it becomes unnecessary for an operator to do such a complicated activity, and the activity burden at the time of edit can be mitigated. Moreover, in spite of having corrected the low order clip, it can prevent beforehand being used while the high order clip has been before correction.

[0299] Moreover, in this edit system 1, when the content of edit over a low-ranking clip is corrected such and it is performed, about the clip (namely, clip using the \*\*\*\*\* clip of correction as a raw material) linked to the high order of that clip based on the relation during a clip, similarly, the content of edit is rerun and it is made as [ change / automatically ]. For this reason, even if an operator looks for the clip linked to the high order to the \*\*\*\*\* clip of correction like before and an operator does not redo specially the editing task to that high order clip, the clip easily linked to a high order can be changed, and the activity burden placed on an operator can be reduced.

[0300] Thus, in the edit system 1 of this invention, even if an operator does not memorize the relation during the clip specially like before by having managed each clip by the layered structure based on the up Shimonoseki charge during a clip, while being able to change an editing task easily, an editing task can be performed efficiently. Moreover, since it has left the activity data of the origin involved in edit even when the content of edit is changed, it can return to the original condition easily also after edit Make Changes. Since the relation during each clip is furthermore managed by the layered structure, if an editing task is performed one by one based on the relation during the clip managed by the layered structure, a complicated editing task can also be performed easily.

[0301] having displayed GUI of a corresponding processing module on display 2B, when according to the above configuration dividing a processing module into the synthetic module CM, the special effect module SM, and the edit module EM for every function and performing an editing task using each processing module -- an edit operator -- \*\* -- an intermediary -- an intelligible user interface can be offered and outstanding operability can be realized. When it enables it to perform different edit processing incidentally, and they are made to serve a double purpose by one user interface and are operated, there is a possibility that actuation may become complicated, but like the edit system 1, by one user interface, if \*\*\*\*\* also divides the content of a display for every module, the outstanding operability is physically realizable.

[0302] In addition, in the gestalt of above-mentioned operation, although the case where the relation between a low order clip and a high order clip was managed in a format as shown in drawing 13 was described, this invention can acquire the same effectiveness as an above-mentioned case, if it is made to manage by the layered structure so that the link place of each clip may be known at least not only in this.

[0303] Moreover, in the gestalt of above-mentioned operation, although the case where this invention was applied to the edit system 1 was described, even if it applies this invention to not only this but a display, or a computer apparatus widely, it can acquire the same effectiveness as an above-mentioned case.

[0304]

[Effect of the Invention] having displayed the graphical user interface of a corresponding processing module on the display, when dividing a processing module according to the content of edit given to the clip for edit and performing an editing task using each processing module according to this invention as mentioned above -- an edit operator -- \*\* -- an intermediary -- an intelligible user interface can be offered and the outstanding operability can be realized.

---

**TECHNICAL FIELD**

---

[Field of the Invention] This invention is applied to the edit system which performs edit processing in an edit system and a display list especially about a computer apparatus using two or more raw materials, and is suitable.

---

## PRIOR ART

---

[Description of the Prior Art] In recent years, in the field of the postproduction which edits the video data obtained from the video camera, the non-linear-editing system which used the disk as a record medium which records the data of a raw material is proposed. Edit processing of various classes exists as edit processing performed in this non-linear-editing system. For example, the video edit processing for connecting two or more raw materials and creating a desired video program, the synthetic processing for therefore compounding two or more raw materials to a keying signal, the special effect processing that performs special effect processing to a raw material exist. Generally, this video edit processing is performed by edit equipment, synthetic processing is performed by the video switcher, and special effect processing is performed in special effect equipment.

[0005] Intermediary \*\*\*\* [ as ] as which the edit processing which access becomes possible simultaneously to two or more channels, consequently therefore processes the video data of two or more channels on real time to improvement in the random access nature of a disk-like record medium in recent years is requested. For example, in the edit industry for TV commercial creation, or the edit industry for film programmings, while performing edit processing using hundreds of [ dozens to ] raw materials, to use it combining edit processing of a different class is demanded. Furthermore, intermediary \*\*\*\* [ as ] as which generating complicated advanced and edit result data therefore repeating repeatedly two or more kinds of these edit processings, and performing them is required.

---

## EFFECT OF THE INVENTION

---

[Effect of the Invention] having displayed the graphical user interface of a corresponding processing module on the display, when dividing a processing module according to the content of edit given to the clip for edit and performing an editing task using each processing module according to this invention as mentioned above -- an edit operator -- \*\* -- an intermediary -- an intelligible user interface can be offered and the outstanding operability can be realized.

---

## TECHNICAL PROBLEM

---

[Problem(s) to be Solved by the Invention] By the way, while carrying out edit processing of two or more raw materials in this way, when using it combining edit processing of a different class, as a user interface offered to an operator, what it is easy to use is desired on operability.

[0007] This invention was made in consideration of the above point, and even when it enables it to perform edit processing of a different class, it tends to propose a computer apparatus in the edit system and display list which can offer the outstanding operability.

## MEANS

[Means for Solving the Problem] In order to solve this technical problem, it sets to this invention. The edit module which therefore generates an edit result clip in the edit system for editing two or more clips for edit to perform edit processing to the clip for edit, The synthetic module which therefore generates an edit result clip to perform synthetic processing to the clip for edit, The edit means which consists of an edit result clip to perform special effect processing corresponding to an edit module, The special effect modules which therefore generate an edit result clip to perform special effect processing corresponding to a synthetic module, The graphical user interface for synthetic processing corresponding to a special effect module, In performing edit processing on a display and performing edit processing to a synthetic module therefore In displaying the graphical user interface for edit processing on a display and performing edit processing to an edit module therefore, it establishes a display-control means to display the graphical user interface for edit processing on a display.

[0009] Moreover, in this invention, it sets to the display for editing two or more clips for edit. The edit module which therefore generates an edit result clip to perform edit processing to the clip for edit, The synthetic module which therefore generates an edit result clip to perform synthetic processing to the clip for edit, The edit means which consists of special effect modules which therefore generate an edit result clip to perform special effect processing to the clip for edit, The graphical user interface for edit processing corresponding to an edit module, The graphical user interface for synthetic processing corresponding to a synthetic module, The user interface means which consists of graphical user interfaces for special effect processing corresponding to a special effect module, In performing edit processing to an edit module therefore In displaying the graphical user interface for edit processing on a display and performing edit processing to a synthetic module therefore In displaying the graphical user interface for edit processing on a display and performing edit processing to an edit module therefore, it establishes a display-control means to display the graphical user interface for edit processing on a display.

[0010] Moreover, in this invention, it sets to the computer apparatus for editing two or more clips for edit. The edit module which therefore generates an edit result clip to perform edit processing to the clip for edit, The synthetic module which therefore generates an edit result clip to perform synthetic processing to the clip for edit, The edit means which consists of special effect modules which therefore generate an edit result clip to perform special effect processing to the clip for edit, The graphical user interface for synthetic processing corresponding to an edit module, The graphical user interface for synthetic processing corresponding to a synthetic module, The user interface means which consists of graphical user interfaces for special effect processing corresponding to a special effect module, In performing edit processing to an edit module therefore In displaying the graphical user interface for edit processing on a display and performing edit processing to a synthetic module therefore In displaying the graphical user interface for edit processing on a display and performing edit processing to an edit module therefore, it establishes a display-control means to display the graphical user interface for edit processing on a display.

[0011] thus, the thing for which the graphical user interface of a corresponding processing module was displayed on the display when dividing a processing module according to the content of edit given to the clip for edit and performing an editing task using each processing module -- an edit operator -- \*\* -- an intermediary -- an intelligible user interface can be offered and the outstanding operability can be realized. When it enables it to perform different edit processing incidentally, and they are made to serve a double purpose by one user interface and are operated, there is a possibility that actuation may become complicated, but like this invention, by one user interface, if \*\*\*\*\* also divides the content of a display for every module, the outstanding operability is physically realizable.

[0012]

[Embodiment of the Invention] About a drawing, the gestalt of 1 operation of this invention is explained in full detail below.

[0013] (1) the whole edit system \*\*\*\* -- explain the whole edit system configuration by this invention using introduction drawing 1 first. In drawing 1, 1 showed the edit system by this invention as a whole, and is equipped with the workstation 2 which controls the whole system concerned. This workstation 2 has body 2A equipped with CPU (central-process unit), various processing circuits or a floppy disk drive, a hard disk drive, etc., and display 2B [ which is connected to the body 2A concerned ], keyboard 2C, mouse 2D, and pen tablet 2E. The application software for edit is beforehand installed in the hard disk drive, and such a workstation 2 is made as [ start / as a computer for edit ] by operating the application software concerned by the radical of an operating system.

[0014] When operating this application software incidentally, it is made as [ display / on display 2B / the graphical display for GUI (graphical user interface) ], and pen tablet 2E and mouse 2D which were mentioned above are used, and if the graphical display of the request displayed on the display 2B concerned is chosen, it is made as [ input / a desired editing command / to this workstation 2 ]. Moreover, it is made as [ input / through keyboard 2C / the various numeric data concerning edit etc. / to this workstation 2 ].

[0015] In addition, if an editing command and various numeric data are inputted by actuation of an operator, this workstation 2 is made as [ output / to the device controller 3 which mentions the control data according to those editing command and various numeric data later ], and is made as [ control / each device which constitutes this edit system 1 through a device controller 3 by this ]. However, about the video disc recorder 5, it is made as [ control / \*\* / without a device controller 3 / directly / a part of functions ].

[0016] Moreover, it is made as [ input / through that device controller 3 / into this workstation 2 / a video data ], and is made as [ display / on display 2B / the image of an edit raw material, the image after edit, etc. ].

[0017] A device controller 3 is a control unit which controls each device actually in response to the control data from a workstation 2. To this device controller 3, the exclusive controller 4 with a dial handler, a slide handler, etc. is connected, and, thereby, it is made by this edit system 1 as [ input / control data which cannot be inputted and which changes gradually ] by keyboard 2C [ of a workstation 2 ], mouse 2D, or pen tablet 2E.

[0018] This device controller 3 receives the control data from a workstation 2 or the exclusive controller 4, and controls the device corresponding to that control data. For example, to a video disc recorder 5, a device controller 3 directs playback of a raw material, and record of the raw material after edit. The video data and audio data of a request raw material with which the carrier beam video disc recorder 5 is recorded on the internal disk-like record medium according to those directions in these directions are reproduced and outputted, or the video data and audio data which were edited are recorded on the disk-like record medium concerned.

[0019] Similarly, a device controller 3 directs playback of a raw material also to a video tape recorder (VTR) 6. The video data and audio data of a request raw material with which the carrier beam video tape recorder 6 is recorded on the internal video tape according to those directions in these directions are reproduced and outputted. In addition, in the case of this edit system 1, the video data currently recorded on the video tape recorder 6 is treated as a video data of a raw material, once it downloads to a video disc recorder 5.

[0020] Moreover, to a switcher 7, a device controller 3 directs selection of the video data outputted from a video disc recorder 5, a video tape recorder 6, or a video camera 8. The video data of the request raw material by which these directions are inputted into the carrier beam switcher 7 according to those directions is chosen. Output to the digital multi-effector 9, or A device controller 3 is minded. Output to a workstation 2 or Or make sequential selection, and connect the video data of the request raw material inputted, the edited video data is outputted and displayed on a monitor 10, or the edited video data is made to return and record on a video disc recorder 5.

[0021] Moreover, to the digital multi-effector 9, a device controller 3 directs various effect processings.

It is made as [ output / to a workstation 2, a monitor 10, or video disc recorder 5 grade / to the video data of the request raw material by which these directions are inputted into the carrier beam digital multi-effector 9 according to those directions, perform effect processing of special effect processing of mosaic processing, three dimension image transformation processing, etc., a transition effect, etc., or image composition processing, return again the video data obtained as a result to a switcher 7, and ].

[0022] Moreover, to the audio mixer 11, a device controller 3 directs edit of the audio data outputted from a video disc recorder 5 or a video tape recorder 6. The carrier beam audio mixer 11 carries out synthetic processing (mixing) of the desired audio raw material for these directions according to those directions, and that audio data by which synthetic processing was carried out is made to return and record on a video disc recorder 5 again.

[0023] In the edit system 1 which has such a configuration in this way, by inputting a desired editing command through a workstation 2, the video data of two or more of a variety of raw materials currently recorded on the video disc recorder 5 or the video tape recorder 6 is used, and it is made as [ create / the video data of a complicated advanced and request / easily ]. Even if an operator does not do by this the direct control of each device which constitutes an edit system like before, while being able to perform various edits only by operating a workstation 2 and being able to reduce the actuation concerning edit as compared with the former, the user-friendliness of an edit system can be improved.

[0024] (2) \*\*\*\* of a workstation -- this term explains the configuration of the workstation 2 which is central existence of the edit system 1. As shown in drawing 2, a workstation 2 As opposed to CPU21 which controls the system bus 20 for transmitting command data and a video data, and the whole workstation 2, and the video data S1 supplied from a device controller 3 An image processing etc. The HDD interface 24 for controlling the display controller 23 and local hard disk drive (local HDD) 24A which manage the graphical display for the video processor 22 to perform, the video data displayed on display 2B, or GUI, The FDD interface 25 for controlling floppy disk drive (FDD) 25A, keyboard 2C, As opposed to the pointing device interface 26 and device controller 3 which generate control command based on the command from pointing devices, such as mouse 2D and pen tablet 2E It has the external interface 27 equipped with the software driver for sending out control data S2.

[0025] A system bus 20 is a bus for transmitting a video data, command data or address data, etc. in the workstation 2 interior, and consists of image data bus 20A for transmitting a video data, and command data bus 20B for transmitting command data and address data.

[0026] CPU21, the video processor 22, the display controller 23, the HDD interface 24, and the FDD interface 25 are connected to image data bus 20A, respectively, and CPU21 concerned, the video processor 22, the display controller 23, the HDD interface 24, and the FDD interface 25 are made as [ transmit / through this image data bus 20A / a video data ].

[0027] On the other hand, CPU21, the video processor 22, the display controller 23, the HDD interface 24, the FDD interface 25, the pointing device interface 26, and the external interface 27 are connected to command data bus 20B, respectively (that is, all blocks of the workstation 2 interior are connected), and it is made as [ perform / through the command data bus 20B concerned / transmission of command data or address data ].

[0028] CPU21 is a block which controls the workstation 2 whole, and has ROM21A in which the operating system of a workstation 2 is stored, and RAM21B in which the uploaded application software, a database, etc. are stored. When starting a workstation 2, CPU21 is made as [ start / by operating based on the operating system memorized by ROM21A ]. Moreover, when starting application software under the operating system under this starting, CPU21 reads the application software currently first recorded on the hard disk of hard disk drive 24A, uploads it to RAM21B, and is made as [ start / after that / the application software concerned / perform and ].

[0029] in addition, the modularization of the application software is divided and carried out for every function, and it is mentioned later -- as -- large -- dividing -- a raw material -- connecting -- etc. -- with the edit module for carrying out The synthetic module for performing \*\*\*\*\* processing when with the superposition of a raw material etc., Therefore, it is constituted by the special effect module for performing \*\*\*\*\* processing when with the three-dimension-image transformation of a raw

material etc., and the control module which manages starting of these modules, carrier delivery of the data of an inter module, etc. That is, the module (an edit module, a synthetic module, or special effect module) which in the case of this system corresponds under management of that control module if a control module starts first and edit directions are inputted by the operator when application software is started is started suitably, and it is made as [ perform / edit directed by the operator ].

[0030] The video processor 22 is the block for buffering the changed video data temporarily while performing data conversion for the video data S1 of SDI (SerialDigital Interface) specification inputted into a workstation 2 to reception and the video data S1 concerned. specifically, the video processor 22 should resemble frame memory 22C which memorizes temporarily the video data for several frames sent out from data-conversion section 22B which extracts a composite video signal from processor controller 22A which controls the whole video processor 22 concerned, and the pay-load section of the receptacle \*\*\*\*\* video data S1, and changes the composite video signal concerned into a digital component video data, and data-conversion section 22B -- intermediary \*\*\*\* -- last \*\*

[0031] Processor controller 22A makes the data-conversion section 22B concerned extract a time code from a video data S1 while controlling data-conversion actuation of the data-conversion section 22B concerned by sending out a control signal to data-conversion section 22B. Moreover, processor controller 22A controls the read/write timing and the read/write address of the frame memory 22C concerned by sending out a control signal to frame memory 22C. Incidentally, about lead timing, processor controller 22A controls the lead timing of frame memory 22C so that the time code and video data (frame data) which are sent out to the display controller 23 correspond.

[0032] Data-conversion section 22B changes a composite video signal into a digital component video data based on the control signal from processor controller 22A. Incidentally, a time code is extracted in this conversion process. The time code which was sent out to frame memory 22C, and was extracted as the video data obtained by this conversion was mentioned above is sent out to processor controller 22A.

[0033] Frame memory 22C memorizes temporarily the video data supplied from data-conversion section 22B. Therefore, the read/write timing of this frame memory 22C is controlled by processor controller 22A, as mentioned above. This frame memory 22C consists of at least two frame memories, and is made as [ memorize / the video data for at least two frames ].

[0034] processor controller 22A carries out reading appearance of the video data memorized by this frame memory 22C, and reading appearance is carried out based on control. Image size is made smaller than a subject-copy image by not being that of all pixel reading \*\*\*\*, thinning out the video data memorized by frame memory 22C at the predetermined spacing, and reading in that case. Thus, since the video data from which image size was changed small is displayed on the predetermined display area of display 2B as an object for the check of a raw material or an edit result, it is sent out to the display controller 23 through image data bus 20A.

[0035] The display controller 23 is control block for controlling the data displayed on display 2B. The display controller 23 has memory controller 23A and VRAM(video random access memory)23B. memory controller 23A -- the internal synchronization of a workstation 2 -- therefore, the read/write timing of VRAM23B is controlled. The image data therefore generated by the video data and CPU21 which were sent out from frame memory 22C of the video processor 22 is memorized by this VRAM23B based on the timing-control signal from memory controller 23A. Based on the timing-control signal from memory controller 23A based on the internal synchronization of a workstation 2, reading appearance of the video data and image data which were memorized by this VRAM23B is carried out, and they are displayed on display 2B.

[0036] In this case, the graphical display by the image data turns into graphical display for GUI. Incidentally, they are image datas, such as an icon a sending-out \*\*\*\* image data indicates a window, cursor or a scroll bar, and a device to be to VRAM23B from CPU21.

[0037] It is made in this way as [ display / on the display 2B concerned / GUI for operator actuation, or the image of a raw material or an edit result ] by displaying these image datas and video datas on display 2B in this workstation 2.

[0038] The HDD interface 24 is the interface block for communicating with local hard disk drive 24A

prepared in the workstation 2 interior. This HDD interface 24 and hard disk drive 24A are made as [ perform / based on a SCSI (Small Computer System Interface) transmission format / a communication link ].

[0039] In installing in hard disk drive 24A the application software which starts by this workstation 2 and performing the application software concerned, reading appearance is carried out from this hard disk drive 24A, and it uploads to RAM21B of CPU21. Moreover, in case this application software is ended, the various information (for example, information on the database about an edit raw material etc.) therefore generated by the edit operation memorized by RAM21B is downloaded to a hard disk through this hard disk drive 24A.

[0040] The FDD interface 25 is the interface block for communicating with floppy disk drive 25A prepared in the workstation 2 interior. This FDD interface 25 and floppy disk drive 25A are made as [ perform / based on a SCSI transmission format / a communication link ].

[0041] The pointing device interface 26 is an interface block which receives the information from keyboard 2C [ which was connected to the workstation 2 ], mouse 2D, and pen tablet 2E. The pointing device interface 26 decodes reception and receptacle \*\*\*\*\* input, and sends out the input from a carbon button prepared in keyboard 2C to CPU21. the detection information on the two-dimensional rotary encoder with which similarly the pointing device interface 26 was formed in mouse 2D, and the click information on a carbon button on either side (namely, selection assignment information by the carbon button depression) prepared in mouse 2D -- the reception from the mouse 2D concerned, and receptacle \*\*\*\*\* -- the information on them is decoded and it sends out to CPU21. Similarly, the pointing device interface 26 decodes reception and the location data of receptacle \*\*\*\*\*, and sends out the two-dimensional location data of pen tablet 2E to CPU21. While being able to recognize whether which command carbon button was directed among GUI as which CPU21 is displayed on display 2B based on the information from such a pointing device interface 26, the various data inputted from keyboard 2C can be recognized, and control corresponding to them can be performed.

[0042] An external interface 27 is the block for communicating with the device controller 3 connected to the exterior of a workstation 2. The external interface 27 has the driver which changes into the data of a predetermined communications protocol various control command generated by CPU21, such as a playback command and a record command, and sends out the control command data S2 to a device controller 3 through the driver concerned.

[0043] (3) \*\*\*\* of the edit in an edit system -- this term explains order later on below about the principle of the edit in the edit system 1.

[0044] (3-1) basic \*\*\*\* of the application software for edit -- explain the basic configuration of the application software for edit currently prepared in the workstation 2 by this term for beginning first. As shown in drawing 3, in this edit system 1, the application software for edit by which the modularization was carried out for every function is prepared for the workstation 2. This application software by which a modularization was carried out roughly divides, and, therefore, is constituted by control-module CNTM manage starting of an edit module EM, a synthetic module CM, and a special-effect module SM by which a modularization was carried out to the edit module EM which a raw material connects and performs edit processing of processing etc., the synthetic module CM which performs synthetic processing of superposition processing of a raw material etc., and the special-effect module SM which perform the special-effect processing to a raw material for every functions of these. The application software which has such a configuration is made as [ start / according to the directions from an operator / each modules EM, CM, and SM / under management of the control-module CNTM / control-module CNTM starts first and /, respectively / suitably ], if it uploads from hard disk drive 24A to RAM21B.

[0045] Therefore the clip database CDB was constituted by a video disc recorder 5 and RAM21B, and has memorized the video data of a raw material, and the various data about edit. Each modules EM, CM, and SM read the raw material specified by the operator from the clip database CDB, using the hardware of the switcher 7 mentioned above or digital multi-effector 9 grade, perform edit according to directions of an operator to the raw material, and register into the clip database CDB the raw material after [ which

is obtained as a result ] being edited. Moreover, each modules EM, CM, and SM also register into the clip database CDB the data about edits, such as various parameters used for edit. In addition, it is made as [ memorize / as a clip database CDB, / mainly memorize the video data of a raw material to a video disc recorder 5, and / to RAM21B / the various data about edit ].

[0046] (3-2) By the edit system 1 by definition this invention of a clip, each raw material is treated in the unit called a clip. This term defines this clip. In the edit system 1 by this invention, one sequence of a video video data is defined as a clip video data, how the clip video data's being generated and the data to manage are defined as clip management data in it, and the data which consist of these clip video datas and clip management data further are defined as a clip in it. Moreover, in the edit system 1 by this invention, the raw material generated by editing a raw material clip (MC), and a call and its raw material clip in the raw material generated by only starting from a source video data is called a result clip (FC).

[0047] In the edit system 1 by this invention, it is made as [ manage / a raw material clip or two or more clips which consist of a clip a result / to the layered structure based on the relation during a clip / therefore ]. It explains below, referring to the example which shows this situation to drawing 4 .

[0048] In the example shown in drawing 4 , result clip FC-008 are the clip therefore generated by compounding three raw material clips, raw material clip MC-001, raw material clip MC-002, and raw material clip MC-003. namely, a result -- the relation between clip FC-008, and raw material clip MC-001, raw material clip MC-002 and raw material clip MC-003 -- up Shimonoseki charge -- intermediary \*\*\*\*. When such up Shimonoseki charge has, raw material clip MC-001, raw material clip MC-002, and raw material clip MC-003 are called a low order clip from the subordinate of result clip FC-008 having, respectively, and since result clip FC-008 generalize these low order clip conversely and are generated, they are called a high order clip to it.

[0049] Similarly, result clip FC-009 are the clip therefore generated by giving special effect to raw material clip MC-004. For this reason, raw material clip MC-004 become the low order clip of result clip FC-009, and result clip FC-009 become the high order clip of raw material clip MC-004 at reverse.

[0050] Moreover, result clip FC-010 are a clip as a result of being generated therefore by what (it therefore connects to wipe etc. in this case) clip FC-009 are edited for result clip FC-008 and a result. for this reason, a result -- clip FC-008 and a result -- clip FC-009 -- respectively -- a result -- the low order clip of clip FC-010 -- becoming -- a result -- clip FC-010 -- a result -- clip FC- it becomes the high order clip of clip FC-009 008 and a result.

[0051] Thus, up Shimonoseki charge is between each clip, and it is made in this edit system 1 as [ manage / based on the up Shimonoseki charge during this clip / in the clip database CDB / by the layered structure / the clip concerned ]. In addition, although the raw material clip which is not used for edit processing at all does not have \*\*\*\*\* with regards to other clips, such a raw material clip is managed as a thing without a link place. Moreover, naturally as for the example shown here, other combination also exists as up Shimonoseki charge during a \*\*\*\*\* clip for example to the last.

[0052] (3-3) The principle, then this term of synthetic processing explain the principle of the synthetic processing performed by the synthetic module CM. As a result of being shown in drawing 4 , therefore, the video image of clip FC-008 is generated by carrying out synthetic processing (namely, composite processing) of the video image of raw material clip MC-001, raw material clip MC-002, and raw material clip MC-003. The principle of this synthetic processing is shown in drawing 5 and drawing 6 . Drawing 5 shows signs that three video images, raw material clip MC-001, MC-002, and MC-003, are compounded, and drawing 6 expresses the video image of clip FC-008, as a result of being generated by synthetic processing therefore.

[0053] In the edit system 1 by this invention, when compounding two or more clips, it considers that each clip is one layer (namely, layer), and is made as [ perform / synthetic processing ] by piling up the layer. In the example shown in drawing 5 , raw material clip MC-003 were specified as the 1st layer L1, raw material clip MC-002 were specified as the 2nd layer L2, and raw material clip MC-001 are specified as the 3rd layer L3. When compounding the raw material clip assigned to each layers L1, L2, and L3, it is carried out by going each layers L2 and L3 in piles one by one on it by using a layer L1 as the lowest layer. Namely, after the video image (for example, image showing a background) of raw

material clip MC-003 specified as the 1st layer L1 The video image (for example, image showing a person) of raw material clip MC-002 specified as the 2nd layer L2 is piled up and compounded. The video image (for example, image showing a character) of raw material clip MC-001 furthermore specified as the 3rd layer L3 after the compound video image is piled up and compounded. three raw materials as shown in drawing 6 by such synthetic processing -- lapping -- \*\*\*\*\* -- clip FC-008 are generable as a result of a video image [ like ].

[0054] In addition, although the example shown in this drawing 5 showed the example which compounds raw material clip MC-003 assigned to three layers L1-L3, respectively, MC-002, and MC-001 In the edit system 1 by this invention, it is made as [ compound / from the intermediary cage / as / and the 1st layer L1 which can secure ten layers at the maximum / ten raw material clips assigned to the 10th layer L10, respectively ]. Incidentally, in this case, the 1st layer L1 turns into a layer of the lowest layer, and the 10th layer L10 with the largest layer number turns into a layer of the maximum upper layer.

[0055] Next, with reference to drawing 7 , this synthetic processing is explained in more detail. Drawing 7 makes the direction of an axis of abscissa time amount, and signs that result clip FC-008 are generated by synthetic processing with raw material clip MC-003 specified as the 1st layer L1, raw material clip MC-002 which were specified as the 2nd layer L2, and raw material clip MC-001 which were specified as the 3rd layer L3 are shown. As shown in this drawing 7 , in result clip FC-008, the 8th editing point EP 8 is set up from the 1st editing point EP 1 as the modification point of each parameter, such as the edit start point (this is hereafter called the Inn point) and the point (this is hereafter called the out point) ending [ edit ] of each raw material clip, and composition or image transformation.

[0056] The 1st editing point EP 1 shows the Inn point IN3 of raw material clip MC-003, the 2nd editing point EP 2 shows the Inn point IN2 of raw material clip MC-002, and the 4th editing point EP 4 shows the Inn point IN1 of raw material clip MC-001. Moreover, the 6th editing point EP 6 shows the out point OUT2 of raw material clip MC-002, the 7th editing point EP 7 shows the out point OUT1 of raw material clip MC-001, and the 8th editing point EP 8 shows the out point OUT3 of raw material clip MC-003. In addition, the 3rd editing point EP 3 and the 5th editing point EP 5 are editing points set up in order to change the synthetic parameter of each layer. About these editing points EP3 and EP5, it mentions later for details.

[0057] Each clip has the original internal time code which begins from the head location of the video data of each clip, as shown in drawing 7 . For example, raw material clip MC-003 specified as the 1st layer L1 have the internal time line t3 started from the head location S3 of the video data. Raw material clip MC-002 specified as the 2nd layer L2 have the internal time line t2 started from the head location S2 of the video data. Raw material clip MC-001 specified as the 3rd layer L3 have the internal time line t1 started from the head location S1 of the video data.

[0058] the same -- a result -- a clip -- FC - 008 -- the -- a video data -- a head -- a location -- S -- eight -- from -- starting -- the interior -- the time line -- t -- eight -- having -- \*\*\*\* -- having mentioned above -- the -- one -- edit -- a point -- EP -- one -- from -- the -- eight -- edit -- a point -- EP -- eight -- a time code -- respectively -- a result -- a clip -- FC - 008 -- the time line -- t -- eight -- a top -- a time code -- therefore -- a definition -- carrying out -- having -- \*\*\*\* .

[0059] For the Inn point IN3 and the out point OUT3 of raw material clip MC-003, therefore, it is defined as the time line t3 of raw material clip MC-003, respectively, and these time codes are "00:00:31:02" and "00:05:18:02", and intermediary \*\*\*\*, respectively. therefore, the time code of this Inn point IN3 -- a result -- clip FC- the time code "00:00:00:00" of the 1st editing point EP 1 in 008 -- corresponding -- the time code of the out point OUT3 -- a result -- clip FC- the time code "00:04:47:00" of the 8th editing point EP 8 in 008 is supported.

[0060] Similarly, for the Inn point IN2 and the out point OUT2 of raw material clip MC-002, therefore, it is defined as the time line t2 of raw material clip MC-002, respectively, and these time codes are "00:00:51:00" and "00:03:04:20", and intermediary \*\*\*\*, respectively. therefore, the time code of this Inn point IN2 -- a result -- clip FC- the time code "00:00:42:20" of the 2nd editing point EP 2 in 008 -- corresponding -- the time code of the out point OUT2 -- a result -- clip FC- the time code "00:02:59:20"

of the 6th editing point EP 6 in 008 is supported.

[0061] Similarly, for the Inn point IN1 and the out point OUT1 of raw material clip MC-001, therefore, it is defined as the time line t1 of raw material clip MC-001, respectively, and these time codes are "00:01:40:03" and "00:02:45:48", and intermediary \*\*\*\*, respectively. therefore, the time code of this Inn point IN1 -- a result -- clip FC- the time code "00:01:56:00" of the 4th editing point EP 4 in 008 -- corresponding -- the time code of the out point OUT1 -- a result -- clip FC- the time code "00:03:19:45" of the 7th editing point EP 7 in 008 is supported.

[0062] When result clip FC-008 are reproduced, therefore, in the period from the 1st editing point EP 1 to the 2nd editing point EP 2 The video image of raw material clip MC-003 is outputted. In the period from the 2nd editing point EP 2 to the 4th editing point EP 4 The video image by which raw material clip MC-002 were compounded is outputted on raw material clip MC-003. In the period from the 4th editing point EP 4 to the 6th editing point EP 6 The video image by which raw material clip MC-002 and raw material clip MC-001 were compounded is outputted on raw material clip MC-003. In the period from the 6th editing point EP 6 to the 7th editing point EP 7 On raw material clip MC-003, the video image by which raw material clip MC-001 were compounded will be outputted, and the video image of raw material clip MC-003 will be outputted in the period from the 7th editing point EP 7 to the 8th editing point EP 8.

[0063] In addition, the synthetic processing explained here is an example to the last, and, naturally other combination also exists as combination of the clip by which synthetic processing is carried out.

[0064] (3-4) The principle, then this term of special effect processing explain the principle of the special effect processing performed by the special effect module SM. As a result of being shown in drawing 4, clip FC-009 are the clip generated by performing special effect processing to raw material clip MC-004. Here, in order to give explanation intelligible, the principle of special effect processing is explained to raw material clip MC-004 using drawing 8 as what performs the mosaic effectiveness, the crop effectiveness, three-dimension image transformation, and four special effect processings of the trail effectiveness.

[0065] As shown in drawing 8, in this example, to raw material clip MC-004, the mosaic effectiveness is specified as the 1st special effect E1, the crop effectiveness is specified as the 2nd special effect E2, three-dimension image transformation is specified as the 3rd special effect E3, and the trail effectiveness is specified as the 4th special effect E4.

[0066] In this case, the mosaic effectiveness is effectiveness which divides a video image into a tile-like wafer and shows it like mosaic drawing. Intermediary \*\*\*\* [ as ] which is made as [ set / as any value / the parameter about this mosaic effectiveness ] in the edit system 1 by this invention, and can set the magnitude and the aspect ratio of a wafer of the shape of this tile as any value by this.

[0067] The crop effectiveness is effectiveness which therefore starts a part of video image to make a picture frame small, and it starts from starting a part of video image, and is also called effectiveness. They are a top chord and a lower side location, and intermediary \*\*\*\* [ as ] that can set the shading-off condition of an edge as arbitration further to the right-hand side of a picture frame and a left part location, and a list by the intermediary cage [ as ] and this which can set the parameter about this crop effectiveness as any value in the edit system 1 by this invention.

[0068] Three-dimension image transformation (3-Dimensional Transform) is effectiveness which changes an image virtually on three-dimension space. For example, if the X-axis was defined for the horizontal direction of an image and the Y-axis and the depth direction were perpendicularly defined as the Z-axis, it is the thing of image transformation which rotates an image or moves an image to the X-axis, a Y-axis, or Z shaft orientations by setting a revolving shaft as the X-axis concerned, a Y-axis, or the Z-axis. The intermediary cage [ as ] which can set the parameter about this three-dimension image transformation as any value in the edit system 1 by this invention, intermediary \*\*\*\* [ as ] which can perform image transformation of arbitration by this.

[0069] The trail effectiveness is effectiveness which freezes an image as a still picture at intervals of predetermined, and leaves the frozen image as an after-image image in case an image is moved spatially, and, generally it is also called the recursive call effectiveness. Intermediary \*\*\*\* [ as ] which can set as

arbitration the period which it leaves in the edit system 1 by this invention as the intermediary cage [ as ] which can set the parameter about this trail effectiveness as any value, spacing which freezes an image by this, and an after-image.

[0070] Moreover, also in this special effect processing, as shown in this drawing 8 R> 8, in result clip FC-009, the 7th editing point EP 7 is set up from the 1st editing point EP 1 as the edit start point (Inn point) and the point (out point) ending [ edit ] of a raw material clip, and the parameter modification point of image transformation.

[0071] The 1st editing point EP 1 shows the Inn point IN4 of raw material clip MC-004, the start point of the mosaic effectiveness, and the start point of the crop effectiveness. The 2nd editing point EP 2 shows the start point of three-dimension image transformation, and the 4th editing point EP 4 shows the start point of the trail effectiveness. The 7th editing point EP 7 shows the out point OUT4 of raw material clip MC-004, the ending point of the mosaic effectiveness, the ending point of the crop effectiveness, the ending point of three-dimension image transformation, and the ending point of the trail effectiveness. In addition, the 3rd editing point EP 3, the 5th editing point EP 5, and the 6th editing point EP 6 are editing points set up in order to change the conversion parameter of three-dimension image transformation. About these editing points EP3, EP5, and EP6, it mentions later for details.

[0072] Like [ in special effect ] the case of synthetic processing, clip FC-009 have the internal time line t4 and t9 therefore expressed by the original internal time code started from the head location of the video data of each clip, respectively raw material clip MC-004 and a result, and, therefore, the definition of the time code of the 7th editing point EP 7 is carried out to the time code on the result clip FC-time line t9 of 009 from the 1st editing point EP 1 mentioned above.

[0073] For the Inn point IN4 and the out point OUT4 of raw material clip MC-004, therefore, it is defined as the time line t4 of raw material clip MC-004, respectively, and these time codes are "00:10:12:00" and "00:12:18:00", and intermediary \*\*\*\*, respectively. therefore, the time code of this Inn point IN4 -- a result -- clip FC- the time code "00:00:00:00" of the 1st editing point EP 1 in 009 -- corresponding -- the time code of the out point OUT4 -- a result -- clip FC- the time code "00:02:06:00" of the 7th editing point EP 7 in 009 is supported.

[0074] moreover, the initiation point of the mosaic effectiveness specified as the 1st special effect E1 is shown in drawing 8 -- as -- a result -- clip FC- the 1st editing point EP 1 that the time code in 009 is set to "00:00:00:00" -- the termination point of an intermediary cage and the mosaic effectiveness -- a result -- clip FC- the 7th editing point EP 7 that the time code in 009 is set to "00:02:06:00" -- intermediary \*\*\*\*.

[0075] Similarly the initiation point of the crop effectiveness specified as the 2nd special effect E2 it is shown in drawing 8 -- as -- a result -- clip FC- the 1st editing point EP 1 that the time code in 009 is set to "00:00:00:00" -- the termination point of an intermediary cage and the crop effectiveness a result -- clip FC- the 7th editing point EP 7 that the time code in 009 is set to "00:02:06:00" -- intermediary \*\*\*\*.

[0076] moreover, the initiation point of the three-dimension image transformation specified as the 3rd special effect E3 -- a result -- clip FC- the 2nd editing point EP 2 that the time code in 009 is set to "00:00:12:03" -- the termination point of an intermediary cage and three-dimension image transformation -- a result -- clip FC- the 7th editing point EP 7 that the time code in 009 is set to "00:02:06:00" -- intermediary \*\*\*\*.

[0077] moreover, the initiation point of the trail effectiveness specified as the 4th special effect E4 -- a result -- clip FC- the 4th editing point EP 4 that the time code in 009 is set to "00:01:02:50" -- the termination point of an intermediary cage and the trail effectiveness -- a result -- clip FC- the 7th editing point EP 7 that the time code in 009 is set to "00:02:06:00" -- intermediary \*\*\*\*.

[0078] When result clip FC-009 are reproduced, therefore, in the period from the 1st editing point EP 1 to the 2nd editing point EP 2 The video image to which the mosaic effectiveness and the crop effectiveness were given is outputted to the video image of raw material clip MC-004. In the period from the 2nd editing point EP 2 to the 4th editing point EP 4 The video image to which the mosaic effectiveness, the crop effectiveness, and three-dimension image transformation were performed is

outputted to the video image of raw material clip MC-004. In the period from the 4th editing point EP 4 to the 7th editing point EP 7, the video image to which the mosaic effectiveness, the crop effectiveness, three-dimension image transformation, and the trail effectiveness were given will be outputted to the video image of raw material clip MC-004.

[0079] (3-5) The principle, then this term of edit processing explain the principle of the edit processing performed by the edit module EM. As a result of being shown in drawing 4 , clip FC-010 are the clip therefore generated by carrying out edit processing of clip FC-009 result clip FC-008 and a result. Here, in order to give explanation intelligible, the principle of edit processing is explained to the wipe effectiveness as what therefore performs edit processing using drawing 9 .

[0080] As shown in drawing 9 , while result clip FC-008 are specified as the 1st layer L1, in this example, result clip FC-009 are specified as the 2nd layer L2. Moreover, the wipe effectiveness is specified as change-over processing at the time of switching to clip FC-009, as a result of being specified as the 1st layer L1 and specified as the clip FC-008 to 2nd layer L2. In addition, in this edit processing, since a video data is not piled up like synthetic processing but a video data is connected, the direction which becomes previously in time is specified as the 1st layer L1, and the direction which becomes behind in time is specified as the 2nd layer.

[0081] Moreover, it is the thing of the transition effect which switches the image displayed on a screen as wipes and erases the old image by which it is indicated to the wipe effectiveness specified as change-over processing by current by the new image. the wipe effectiveness incidentally specified in the example shown in this drawing 9 -- a result -- the time of switching from an image to the image of clip FC-009 a result of clip FC-008 -- the right-hand side from the left-hand side of a screen -- \*\* -- it is the wipe effectiveness of the class which switches once.

[0082] Moreover, also in this edit processing, as shown in this drawing 9 , in result clip FC-010, the 5th editing point EP 5 is set up from the 1st editing point EP 1 as the edit start point (Inn point) and the point (out point) ending [ edit ] of each clip, and the parameter modification point of edit processing.

[0083] the 1st editing point EP 1 -- a result -- the Inn point IN8 of clip FC-008 -- being shown -- the 2nd editing point EP 2 -- the start point of the wipe effectiveness, and a result -- the Inn point IN9 of clip FC-009 -- being shown -- the 4th editing point EP 4 -- the ending point of the wipe effectiveness, and a result -- the out point OUT8 of clip FC-008 -- being shown -- the 5th editing point EP 5 -- a result -- clip FC- the out point OUT9 of 009 is shown. In addition, the 3rd editing point EP 3 is an editing point set up in order to change the effect parameter of the wipe effectiveness. About this editing point EP 3, it mentions later for details.

[0084] Like synthetic processing and special effect processing in which it explained previously, these results clip FC-008, FC-009, and FC-010 It has the internal time line t8, t9, and t10 therefore expressed by the original internal time code started from the head location of the video data of each clip.

Therefore, the definition of the 5th editing point EP 5 is carried out to the time code on the result clip FC-time line t10 of 010 from the 1st editing point EP 1 mentioned above.

[0085] a result -- the Inn point IN8 and the out point OUT8 of clip FC-008 -- respectively -- a result -- clip FC- therefore, it is defined as the time line t8 of 008 -- having -- these time codes -- respectively -- "00:01:01:20" and "00:04:43:00", and intermediary \*\*\*\*. therefore, the time code of this Inn point IN8 - a result -- clip FC- the time code "00:00:00:00" of the 1st editing point EP 1 in 010 -- corresponding -- the time code of the out point OUT8 -- a result -- clip FC- the time code "00:03:42:00" of the 4th editing point EP 4 in 010 is supported.

[0086] the same -- a result -- the Inn point IN9 and the out point OUT9 of clip FC-009 -- respectively -- a result -- clip FC- therefore, it is defined as the time line t9 of 009 -- having -- these time codes -- respectively -- "00:00:00:50" and "00:02:06:00", and intermediary \*\*\*\*. therefore, the time code of this Inn point IN9 -- a result -- clip FC- the time code "00:03:39:00" of the 2nd editing point EP 2 in 010 -- corresponding -- the time code of the out point OUT9 -- a result -- clip FC- the time code "00:05:44:10" of the 5th editing point EP 5 in 010 is supported.

[0087] moreover, a result -- clip FC- the start point of the wipe effectiveness set up in order to switch the image of clip FC-009 008 and a result -- a result -- clip FC- it is set as the 2nd editing point EP 2 in 010,

and is set as "00:03:39:00" as a time code. Moreover, the ending point of the wipe effectiveness is set as the 4th editing point EP 4 in result clip FC-010, and is set as "00:03:42:00" as a time code.

[0088] When result clip FC-010 are reproduced, therefore, in the period from the 1st editing point EP 1 to the 2nd editing point EP 2 The video image of result clip FC-008 is outputted. In the period from the 2nd editing point EP 2 to the 4th editing point EP 4 An image which switches to the wipe effectiveness at the video image of clip FC-009, and therefore switches from the video image of result clip FC-008 to right-hand side in order of \*\* or an intermediary from the left-hand side of a screen a result is outputted. The image of result clip FC-009 will be outputted in the period from the 4th editing point EP 4 to the 5th editing point EP 5.

[0089] (4) By the graphical display displayed as GUI, then this term, when each module is started, explain the screen of GUI displayed on display 2B of a workstation 2.

[0090] (4-1) This term explains GUI when starting the synthetic module CM at the beginning of GUI \*\*\*\* when starting a synthetic module. In this edit system 1, starting of the synthetic module CM displays graphical display as shown in drawing 10 as GUI of the synthetic module CM on display 2B of a workstation 2.

[0091] As shown in this drawing 10 , as GUI of the synthetic module CM, it roughly divides and, therefore, is constituted by the menu window 30, the clip tree window 31, the key window 32, the library window 33, the time-line window 34, the parameter setting-out window 35, the preview screen-display window 36, the device Control window 37, the content display window 38 of edit, and the control command window 39.

[0092] The menu window 30 is the area for displaying the top menu currently prepared in this edit system 1. In addition, as for this menu window 30, control-module CNTM stands, and a top is displayed from a \*\*\*\* event.

[0093] In the edit system 1 by this invention, for example, the file read-out menu, an initialization menu or a module starting menu, etc. is prepared as a top menu item. If the carbon button of mouse 2D is pushed and a file read-out menu is specified If the list of clips is displayed as a result of already being registered, (the assignment actuation which used this mouse 2D is hereafter called a click), and, and a clip is therefore chosen as click actuation out of it as a result of a request While being displayed on the time-line window which the content of edit of a clip mentions later as a result of [ the ] being chosen, it is displayed on the parameter setting-out window which the content of the parameter set up to the clip as a result mentions later. Therefore, if it reads a clip as a result using this file read-out menu in correcting a clip, as a result of already being registered, as a result, a clip is correctable.

[0094] Moreover, if an initialization menu is therefore chosen as click actuation, reading appearance of the various setting-out items will be carried out, and if a desired item is chosen out of it, the setting-out screen to the selected item will be displayed. Therefore, if it therefore reads the setting-out screen of the item to an initialization menu in initializing to a desired item, a desired value can be set up about the item.

[0095] Moreover, if the command for starting the synthetic module CM, the special effect module SM, or the edit module EM if a module starting menu is therefore chosen as click actuation is displayed and a desired command is chosen out of it, the selected module will be started and GUI corresponding to the module will be displayed on a screen. It is the screen obtained in practice when GUI of the synthetic module CM shown in this drawing 10 therefore also started the synthetic module CM on this module starting menu.

[0096] It is the area where graphical display for which the clip tree window 31 understands visually the up Shimonoseki charge of each clip registered into the clip database is displayed. When it has a relation as the up Shimonoseki charge of each clip showed to drawing 4 , according to the up Shimonoseki charge, a clip tree as shown in drawing 1010 is displayed. Namely, in this case, since the top clip is result clip FC-010, the clip name "FC-010" of result clip FC-010 is displayed on the top of the clip tree window 31. As a low order clip linked to the low order of clip FC-010 as a result, there are clip FC-009 result clip FC-008 and a result. The clip name "FC-008" of these low order clip and "FC-009" are displayed on the location shifted to \*\*\*\*\* and one-step right-hand side in the lower part rather than

clip FC-010 in juxtaposition, respectively, as a result of being a high order clip. The line which connects clip FC-008 and FC-009 to result clip FC-010 a result at this time is displayed, and it is shown that up Shimonoseki charge therefore has clip FC-010, FC-008, and FC-009 these results at this.

[0097] Moreover, as a low order clip linked to the low order of result clip FC-008, there are raw material clip MC-001, raw material clip MC-002, and raw material clip MC-003. The clip name "MC-001" of these low order clip, "MC-002", and "MC-003" are displayed on the location shifted to 1 step of \*\*\*\*\* right-hand side in the lower part of clip FC-008 as a result of being a high order clip in juxtaposition, respectively. It is shown that the line which connects result clip FC-008, raw material clip MC-001, MC-002, and MC-003 is displayed, and up Shimonoseki charge therefore has these clip FC-008, MC-001, MC-002, and MC-003 at this also at this time.

[0098] Similarly, there are raw material clip MC-004 as a low order clip linked to the low order of result clip FC-009. The clip name "MC-004" of this low order clip is displayed on the location shifted to \*\*\*\*\* and one-step right-hand side in the lower part of clip FC-009 as a result of being a high order clip. It is shown that the line which connects raw material clip MC-004 to result clip FC-009 is displayed, and up Shimonoseki charge therefore has these clip FC-009 and MC-004 at this also at this time.

[0099] Thus, in the clip tree window 31, it is made as [ know / visually / the relation during the clip registered into the clip database / at a glance ] by having displayed the clip name of each clip in the shape of a tree.

[0100] In addition, the clip the frame surrounding a clip name is displayed by the thick wire is displayed in current and the time-line window 34, and is an intermediary \*\*\*\*\* clip for edit. Moreover, scroll button 31A of a longitudinal direction is displayed on the lower side location of this clip tree window 31, and it is made as [ scroll / to a longitudinal direction / the clip tree displayed ] by operating this scroll button 31A using mouse 2D.

[0101] Similarly, scroll button 31B of the vertical direction is displayed on the right-hand-side location of the clip tree window 31, and it is made as [ scroll / in the vertical direction / the clip tree displayed ] by operating this scroll button 31B.

[0102] The key window 32 is area where the key selection carbon button for specifying key processing to the clip for edit is displayed, and can specify desired key processing to the clip for edit by clicking the request carbon button in this key selection carbon button. In this case, as a key selection carbon button, as shown in drawing 10 , a luminance key carbon button, the linear key carbon button, the clean key carbon button, the pattern key carbon button, the EKUSUTANARU key carbon button, etc. are prepared.

[0103] Incidentally, key processing is processing which inserts another image in \*\*\*\*\* omission and there for the area based on a keying signal from a video image. moreover, the image which a luminance key is key processing which performs \*\*\*\*\* omission processing based on the luminance signal included in a keying signal, a linear key is a kind of a luminance key, and the adjustable width of face of gain is \*\*\*\*\* key processing narrowly as compared with a luminance key, and is inserted in in key processing with a clean key -- a keying signal -- \*\*\*\*\* -- \*\* -- a \*\* -- inserting in -- processing -- it is . Moreover, a pattern key is key processing which performs clipping processing based on a wipe pattern, and EKUSUTANARUKI is performing key processing based on the keying signal supplied from the exterior.

[0104] Also in this key window 32, scroll button 32A of a longitudinal direction is displayed on the lower side location of the key window 32 concerned, and it is made as [ scroll / to a longitudinal direction / the key selection carbon button displayed ] by operating this scroll button 32A. Similarly, scroll button 32B of the vertical direction is displayed on the right-hand-side location of the key window 32, and it is made as [ scroll / in the vertical direction / the key selection carbon button displayed ] by operating this scroll button 32B.

[0105] The library window 33 is the area for displaying a clip in a list as a result of the raw material clip registered into the clip database. If a desired clip is chosen out of the clip displayed on this library window 33, that selected clip can be specified as an object for edit. In addition, about the detail of this

library window 33, it mentions later.

[0106] The time-line window 34 is the area for arranging the clip for edit in on a time-axis, and specifying the content of edit. Naturally as a time-line window 34 displayed by the synthetic module CM, the thing about synthetic processing is displayed. This time-line window 34 was roughly divided, and is divided into time code display area (Time Code), editing point display area (Edit Point), preview range display area (Preview), and the clip appointed area (L1-L10) sequentially from the top.

[0107] Time code display area is area where the time code in an editing point is displayed. In addition, this time code is a time code on the time line of a clip, as a result of being generated based on the content of edit specified in this time-line window 34.

[0108] Editing point display area is area which therefore points to the point set up as an editing point to Mark Misumi. For example, when synthetic processing as shown in drawing 4 and drawing 7 is specified, it points to the editing points EP1-EP8 using Mark Misumi.

[0109] When the preview carbon button and BIYUU carbon button which are mentioned later are operated in preview range display area, it is the area which shows the range of the video data displayed on the preview screen-display window 36. Since from the editing point EP 1 to the editing point EP 8 is set up as a display rectangle in the case of this example (namely, a result clip FC-008 whole), the bar in which that section is shown is displayed.

[0110] The clip appointed area is the area for specifying the clip for [ which performs synthetic processing ] edit to each layer. In this edit system 1, ten layers from a layer L1 to a layer L10 are prepared, and the clip which serves as a raw material of synthetic processing at that each can be specified. In addition, the display rectangle is restricted as this clip appointed area (as shown in drawing, it is a five layer grade), and no layers L1-L10 can be displayed at once. However, intermediary \*\*\*\* [ as ] which can therefore display a desired layer on this since the clip appointed area can be scrolled in the vertical direction by operating scroll button 34A currently displayed on the right-hand side of this clip appointed area.

[0111] Among ten layers L1-L10, a layer L1 is a layer for specifying the clip used as a base (lowest layer) image at the time of synthetic processing, and is a layer for specifying the clip which goes to a layer L10 from a layer L2 in piles to the base image. In addition, the thing which has a large layer number serves as the upper layer, and a layer L10 turns into a layer of the maximum upper layer here.

[0112] Each layers L1-L10 are divided into the video area (Video) for specifying the clip of a synthetic processing object, respectively, and the key area (Key) for specifying the key processing performed to the specified clip. In this case, that clip is set up to that layer by placing the graphical image (this being hereafter called a cel) of the shape of a rectangle which shows a clip in video area. The key processing to the clip specified as the layer is set up by similarly putting the cel which shows key processing on key area.

[0113] As shown in this drawing 10 here, in setting up raw material clip MC-003 to a layer L1, it chooses raw material clip MC-003 by clicking raw material clip MC-003 in the clip tree window 31 first, or clicking raw material clip MC-003 in the library window 33. If such processing is performed, since the cel of raw material clip MC-003 will be displayed, if this is moved to the video area of a layer L1 and it puts on a request location, raw material clip MC-003 will be set up to a layer L1.

[0114] Similarly, in setting up EKUSUTANARUKI to a layer L1, it chooses EKUSUTANARUKI by clicking an EKUSUTANARU key carbon button in the key window 32 first. If such processing is performed, since the cel which shows EKUSUTANARUKI will be displayed, EKUSUTANARUKI is set [ in / for this / the key area of a layer L1 ] up to a layer L1. It is the same as the actuation at the time of the layer L1 which incidentally also mentioned above the actuation when setting up a clip and key processing to layers L2-L10.

[0115] in addition, the die length corresponding to DEYURESHIYON (time amount from the beginning of a clip to an end) of the clip in the die length of the cel which shows a clip -- intermediary \*\*\*\*.

Moreover, since the cel which shows key processing becomes the clip and pair which were put on video area, it becomes the same die length as the clip put on video area. Moreover, intermediary \*\*\*\* [ as ] understood by one division to which it is made as [ display / into each cel / the alphabetic character

[0122] By the way, gain is set up to 59%. raw material clip MC-002 [ moreover, ] set as the layer L2 -- receiving -- the Inn point (the editing point EP 2) -- Before a few [ the point which raw material clip MC-003 of a layer L3 repeat ], it is gain in a location (the editing point EP 3) 100 It is set as percent. What is necessary is just to click the point which corresponds in the parameter setting-out window 35, respectively, in [ of an out point (the editing point EP 6) ] setting up gain to 0% by the way. If it does in this way, the set-up gain value will be automatically registered into a clip database, respectively. In addition, from the editing point EP 2 before the editing point EP 3 and from the editing point EP 3

before the editing point EP 6, interpolation processing is carried out so that a gain value may continue linearly based on the value set up at each editing point, and the interpolated value is set up automatically.

[0123] As opposed to raw material clip MC-003 which similarly were set as the layer L3 the Inn point (the editing point EP 4) -- by the way -- gain -- 100 It is set as percent. What is necessary is just to click the point of a raw material which sets up gain to 67% mostly in a center position (the editing point EP 5), and corresponds in the parameter setting-out window 35 in [ of an out point (the editing point EP 7) ] setting up gain to 51% by the way, respectively. If it does in this way, the set-up gain value will be automatically registered into a clip database, respectively. In addition, also in this case, from the editing point EP 4 before the editing point EP 5 and from the editing point EP 5 before the editing point EP 7, interpolation processing is carried out so that a gain value may continue linearly based on the value set up at each editing point, and that value is set up automatically.

[0124] If a gain value is set up in this way, when the gain value concerned carries out sequential change and goes by each timing After the video data of raw material clip MC-002 begins to look gradual to on the video data of raw material clip MC-003 used as the base, Furthermore, the video data of raw material clip MC-001 can be seen on those video datas, and an image of an image with which the video data of raw material clip MC-002 and MC-001 diminishes gradually is obtained after that.

[0125] In addition, as the parameter setting-out window 35 is shown in drawing 10 , the value of the set-up parameter can be made to be able to respond with an editing point, it is made as [ display / in the shape of / which made the axis of abscissa time amount and made the axis of ordinate the gain value / a graph ], an operator can see the display by this, and it can grasp visually what kind of parameter was set up to which timing to which layer at a glance.

[0126] The preview screen-display window 36 is area where the video data of a clip is displayed as a result of a raw material clip, when the preview carbon button mentioned later, a BIYUU carbon button, an all preview carbon button, or an all BIYUU carbon button is operated. By having prepared such display area, as a result of being generated as a result of a raw material clip or edit, carrying out an editing task, the video image of a clip can be checked.

[0127] The device Contol window 37 is area where the command carbon button for controlling actuation of the video disc recorder 5 with which the video data of a clip is saved is displayed. As shown in this drawing 10 , as a command carbon button, playback carbon button 37A, stop button 37B, and six skip carbon buttons 37C-37H are formed. In this case, playback carbon button 37A is a command carbon button for sending out a playback command to a video disc recorder 5. Moreover, stop button 37B is a command carbon button for sending out a playback PAUSE command to a video disc recorder 5. Moreover, the skip carbon buttons 37C and 37D are command carbon buttons for sending out the skip command with which an one-frame front stirrup makes a playback location skip to one-frame back to a video disc recorder 5, respectively. Moreover, the skip carbon buttons 37E and 37F are command carbon buttons for sending out the skip command which makes a playback location skip to the editing point in front of one, or the editing point after one, respectively to a video disc recorder 5. Moreover, the skip carbon buttons 37G and 37H are command carbon buttons for sending out the skip command which makes a playback location skip to the head or the last of a video data, respectively to a video disc recorder 5. By preparing such a command carbon button, actuation of a video disc recorder 5 is easily controllable, carrying out an editing task.

[0128] The content display window 38 of edit is the area for displaying the content of edit which it was also called the KO time line and was therefore specified as the time-line window 34. In this case, in the time-line window 34, on constraint of a screen, since all the contents of edit all cannot be displayed at once, it is made as [ grasp / what kind of content of edit is specified as a whole / it / easily ] by displaying the graphical image which reduced that content of edit in this content viewing window of edit. for example, the cylindrical graphical image which shows the clip specified as each layer according to the content of edit when the content of edit which compounds three raw material clip MC-003 which were mentioned above in the time-line window 34, MC-002, and MC-001 is specified -- 3 step pile \*\*\*\*\* -- a graphical image [ like ] is displayed on the content display window 38 of edit. Thereby,

while an operator looks at this display and grasping the whole aspect of the content of edit specified, it may grasp easily that that content is synthetic processing of three clips.

[0129] In addition, in this content viewing window 38 of edit, as a result of [ which is displayed on the library window 33 or the clip tree window 31 ] having already registered with the clip database, also when a clip is chosen, the graphical image which, as a result, shows the content of edit of a clip is displayed. It is \*\*\*\*\* to grasp easily the content of edit specified to the clip as a result of [ the ] choosing, also when a clip is chosen, as a result of being shown by the library window 33 and the clip tree window 31 into the editing task in the time-line window 34 by this.

[0130] Finally the control command window 39 is area where the list of the control command used in this edit system 1 is displayed. As shown in this drawing 10 , as a control command carbon button displayed, there are an editor carbon button (Editor), a composite carbon button (Composite), a special effect carbon button (S-Effect), a preview carbon button (Preview), a BIYUU carbon button (View), an all preview carbon button (All Preview), an all BIYUU carbon button (All View), etc., for example.

[0131] An editor carbon button, a composite carbon button, and a special effect carbon button are carbon buttons for starting the module for edit, respectively. Namely, the synthetic module CM can be under starting, for example, and an editor carbon button is a carbon button for starting the edit module EM, and if this editor carbon button is clicked, \*\*\*\*\* can also start the edit module EM. Moreover, the special effect module SM can be under starting, for example, and a composite carbon button is a carbon button for starting the synthetic module CM, and if this composite carbon button is clicked, \*\*\*\*\* can also start the synthetic module CM. Moreover, the edit module EM can be under starting, for example, and a special effect carbon button is a carbon button for starting the special effect module SM, and if this special effect carbon button is clicked, \*\*\*\*\* can also start the special effect module SM.

[0132] On the other hand, a preview carbon button, a BIYUU carbon button, an all preview carbon button, and an all BIYUU carbon button are carbon buttons for the content check of a clip as a result of a raw material clip. That is, a preview carbon button is a carbon button used when displaying the video data of the selected clip on the preview screen-display window 36. In addition, since the specified content of edit is not performed when this preview carbon button is operated, the video data displayed may differ from the final result (when the content of edit is already performed and the \*\*\*\*\* video data is generated by that content of edit, the video data of the final result is displayed). However, since a display is started shortly after operating this preview carbon button, it is used to check the die length of a clip in an edit process.

[0133] A BIYUU carbon button is a carbon button used when displaying the video data of the selected clip on the preview screen-display window 36. Although this BIYUU carbon button will require time amount before it is displayed when this BIYUU carbon button is operated since the specified content of edit is performed unlike a preview carbon button, it can check the video data after edit.

[0134] An all preview carbon button is a carbon button used when a clip is not chosen but \*\* also displays the video data from the clip of the beginning for edit to the clip of the last for edit on the preview screen-display window 36. In addition, the content of edit from which this all preview carbon button is similarly specified as the preview carbon button is not performed.

[0135] An all BIYUU carbon button is a carbon button used when performing the content of edit specified to all the clips for edit and displaying the video data on the preview screen-display window 36. By operating this all BIYUU carbon button, the specified content of edit is performed and the video data of the final result can be checked. In addition, when the content of edit is performed, the generated clip video data is automatically memorized by the video disc recorder 5, and is registered into the clip database CDB.

[0136] (4-2) GUI, then this term when starting a special effect module explain GUI when starting the special effect module SM. In this edit system 1, starting of the special effect module SM displays graphical display as shown in drawing 11 as GUI of the special effect module SM on display 2B of a workstation 2.

[0137] As shown in this drawing 11 , as GUI of the special effect module SM, it size-comes, it divides, and, therefore, is constituted by the menu window 30, the clip tree window 31, the effect selection

window 40, the library window 33, the time-line window 41, the parameter setting-out window 42, the preview screen-display window 36, the device Control window 37, the content display window 38 of edit, and the control command window 39.

[0138] In addition, among the windows displayed in GUI of this special effect module SM, since the menu window 30, the clip tree window 31, the library window 33, the preview screen-display window 36, the device Control window 37, the content viewing window 38 of edit, and the control command window 39 are the same as the case of the synthetic module CM mentioned above, explanation is omitted here.

[0139] First, the effect selection window 40 is the area for choosing the special effect given to the video data of a clip, and the command carbon button of various special effect is displayed. In this case, as a command carbon button displayed The trail carbon button for specifying the trail processing which adds 3D carbon button for specifying three-dimension image transformation, and an after-image, The brick carbon button for specifying brick processing which sticks a video image on a cubical field, is made to rotate it, and goes, The shadow carbon button for specifying the shadow processing which adds a shadow to a video data, The mix carbon button for specifying the mix processing which mixes a video data, The crop carbon button for specifying the crop processing which starts the light button for specifying the light processing which showers a light from an one direction and adds a shadow to a body, and the predetermined range of a video data etc. is prepared.

[0140] In this effect selection window 40, scroll button 40A of a longitudinal direction is displayed on the lower side location of area, and it is made as [ scroll / to a longitudinal direction / the command carbon button displayed ] by operating this scroll button 40A. Similarly, scroll button 40B of the vertical direction is displayed on the right-hand-side location of the effect selection window 40, and it is made as [ scroll / in the vertical direction / the command carbon button displayed ] by operating this scroll button 40B.

[0141] Intermediary \*\*\*\* [ as ] as which the special effect will be automatically specified if it clicks the command carbon button corresponding to the special effect for which it asks in such an effect selection window 40 after specifying the editing point of giving special effect in the time-line window 41 in choosing desired special effect.

[0142] The time-line window 41 is the area for arranging the clip for edit in on a time-axis, and specifying the content of edit. Naturally as a time-line window 41 displayed by the special effect module SM, the thing about special effect processing is displayed. This time-line window 41 was roughly divided, and is divided into time code display area (Time Code), editing point display area (Edit Point), preview range display area (Preview), and a clip and the special effect appointed area (L1-L10) sequentially from the top.

[0143] Time code display area is area where the time code in an editing point is displayed. In addition, this time code is a time code on the time line of a clip, as a result of being generated based on the content of edit specified in this time-line window 41.

[0144] Editing point display area is area which therefore points to the point set up as an editing point to Mark Misumi. For example, when special effect processing as shown in drawing 4 and drawing 8 is specified, it points to the editing points EP1-EP7 using Mark Misumi.

[0145] When the preview carbon button and BIYUU carbon button which were mentioned above are operated in preview range display area, it is the area which shows the range of the video data displayed on the preview screen-display window 36. Since from the editing point EP 1 to the editing point EP 7 is set up as a display rectangle in the case of this example (namely, a result clip FC-009 whole), the bar in which that section is shown is displayed.

[0146] A clip and the special effect appointed area are the area for specifying the special effect given to a clip for every layer. Intermediary \*\*\*\* [ as ] which can specify special effect processing to that clip, respectively while ten layers from a layer L1 to a layer L10 are prepared and being able to specify the clip set as the object of special effect processing at that each in this edit system 1. In addition, the display rectangle is restricted as this clip and special effect appointed area (as shown in drawing, it is an about two layer grade), and no layers L1-L10 can be displayed at once. However, intermediary \*\*\*\*

[ as ] which can therefore display a desired layer on this by that which can scroll a clip and the special effect appointed area in the vertical direction by operating scroll button 41A currently displayed on the right-hand side of this clip and the special effect appointed area.

[0147] Each layers L1-L10 are divided into four special effect appointed area (E1-E4), the video area (Video) for specifying the clip which gives special effect, and the key area (Key) for specifying the key processing to the clip, respectively. The special effect appointed area is the area for specifying the special effect given to the clip registered into video area, and since four of this are prepared in one layer, it is made as [ specify / four special effect / to one clip / simultaneously ]. For example, if specify mosaic processing as special effect E1, crop processing is specified as special effect E2, three-dimension image transformation is specified as special effect E3 and trail processing is specified as special effect E4 as shown in this drawing 11 , those four special effect processings can be performed to clip MC-004 specified in video area.

[0148] In the special effect appointed area, if the command carbon button of the request in the effect selection window 40 is clicked after specifying the range which therefore gives special effect that it specifies an editing point beforehand, when special effect is set up, since the cel which shows the selected special effect will be displayed, the special effect is set [ in / for the cel / the special effect appointed area ] up automatically.

[0149] In setting up a clip in video area, it chooses the clip for edit by clicking the clip which clicks the clip first displayed on the library window 33, or is displayed on the clip tree window 31. If such processing is performed, since the cel which shows the selected clip will be displayed, if this is put on the request location of video area, a clip can be set up to video area.

[0150] Moreover, since the effect selection window 40 will switch to the key window 32 explained previously if the part of "Key" of key area is clicked first in setting up key processing in key area, a desired key carbon button is clicked out of it, and key processing is chosen. If such processing is performed, since the cel which shows the selected key processing will be displayed, if the cel is put on key area, the key processing will be set up automatically.

[0151] In addition, if a clip is double-clicked and chosen as a result of already being placed and displayed on video area the module (namely, the synthetic module CM --) which created the clip as a result While being displayed on the time-line window on GUI of the module with which the content of edit which the special effect module SM or the edit module EM is started, and is given to the clip as a result corresponds The parameter set up to the clip as a result is displayed on a parameter setting-out window.

[0152] The parameter setting-out window 42 is area which sets up the parameter in the special effect processing specified by an operator. In this parameter setting-out window 42, a click of the command carbon button of the effect selection window 40 displays the parameter setup screen about that clicked special effect. For example, if 3D carbon button is clicked in the effect selection window 40 and three-dimension image transformation is specified, the parameter setup screen about three-dimension image transformation as shown in drawing 11 will be displayed on this parameter setting-out window 42.

[0153] As a parameter in three-dimension image transformation, as shown in drawing 11 , there are the location on three-dimension space (X, Y, Z), a hand of cut on three-dimension space (X, Y, Z), an aspect ratio (Asp) that shows the aspect ratio of an image, a skew (Skew) which is the parameter of distortion, and a perspective value (Pers) showing a far and near value. The value of these parameters is made as [ set / as any value / it / between the maximum setting range MAX on the basis of a default (= "0"), and the minimum setting range MIN ].

[0154] The parameter setting-out window 42 and the time-line window 41 mentioned above are intermediary \*\*\*\* [ as ] which can determine the modification point of a parameter while looking at the content of the special effect processing which the axis of abscissa (namely, time-axis) was in agreement, and was specified in the time-line window 41. A longitudinal direction can be made to scroll the graphical image in this parameter setting-out window 42 by incidentally operating scroll button 42A in the lower side location of the parameter setting-out window 42 about the this direction of an axis of abscissa, i.e., a longitudinal direction. At this time, since, as for the time-line window 41 and the

parameter setting-out window 42, the axis of abscissa corresponds, the graphical image in the time-line window 41 concerned and the graphical image in the parameter setting-out window 42 interlock, and are simultaneously scrolled by the longitudinal direction. In addition, the graphical image in the parameter setting-out window 42 concerned can be scrolled in the vertical direction by operating scroll button 42B in the right-hand-side location of the parameter setting-out window 42 about the vertical direction.

[0155] In setting up the parameter of three-dimension image transformation actually here, it specifies the item which clicks a desired item and carries out a parameter setup after this out of the parameter item first displayed on the left corner of the parameter setting-out window 42. Then, while deciding the point which changes a parameter, looking at the content specified in the time-line window 41, the set point is decided and an axis of ordinate clicks the location corresponding to the fixed point and fixed set point in the parameter setting-out window 42 in which an axis of abscissa consists of a time-axis with parameter value. Thereby, the parameter value and the parameter modification point corresponding to the clicked location are automatically registered into the clip database CDB.

[0156] For example, if the place of the value for which it will wish if the location of X shaft orientations is gradually moved in the minus direction from the editing point EP 4 is clicked in order and it goes as shown in drawing 11, the value will be registered automatically. If the place of the value for which it will wish if the location of Y shaft orientations is similarly moved to a plus direction gradually from the editing point EP 6 is clicked in order and it goes, the value will be registered automatically. If the place of the value for which it will wish if the location of Z shaft orientations is similarly moved to a plus direction gradually from the editing point EP 2 is clicked in order and it goes, the value will be registered automatically. In addition, a value which a video image moves continuously is automatically set up by interpolation processing between the points and the points specified by an operator.

[0157] Moreover, if revolution processing which a video image is gradually rotated in the minus direction focusing on the X-axis in the range from the editing point EP 2 to the editing point EP 5, and hard flow is made to rotate gradually again after the editing point EP 5 is performed and the place of a desired value will be clicked in the editing points EP5 and EP7, the value will be registered automatically. In addition, a value which a video image rotates continuously is automatically set up by interpolation processing between the points and the points specified by an operator also in this case. It can be decided to be arbitration by setting out whether incidentally it interpolates linearly or it interpolates in a spline curve. In this example, since it is set up so that it may interpolate in a spline curve about revolution processing, it is set as a \*\*\*\*\* value by the spline curve between the points specified by an operator.

[0158] In this way, if a desired value is set up to the parameter of special effect in this parameter setting-out window 42, the value of that parameter will be registered into the clip database CDB, and special effect will be given to the video data of the clip for edit based on the value of that registered parameter. In addition, as this parameter setting-out window 42 is shown in drawing 11, the value of the set-up parameter can be made to be able to respond with an editing point, it is made as [ display / in the shape of / which made the axis of abscissa time amount and made the axis of ordinate parameter value / a graph ], an operator can see that display by this, and it can grasp visually what kind of value was set up to which timing to which parameter at a glance.

[0159] (4-3) GUI, then this term when starting an edit module explain GUI when starting the edit module EM. In this edit system 1, starting of the edit module EM displays graphical display as shown in drawing 12 as GUI of the edit module EM on display 2B of a workstation 2.

[0160] As shown in this drawing 12, as GUI of the edit module EM, it roughly divides and, therefore, is constituted by the menu window 30, the clip tree window 31, the effect selection window 50, the library window 33, the time-line window 51, the parameter setting-out window 52, the preview screen-display window 36, the device Contol window 37, the content display window 38 of edit, and the control command window 39.

[0161] In addition, among the area displayed in GUI of this edit module EM, since the menu window 30, the clip tree window 31, the preview screen-display window 36, the device Contol window 37, and the control command window 39 are the same as the case of the synthetic module CM mentioned above,

explanation is omitted here.

[0162] First, the effect selection window 50 is the area for choosing the transition effect used when switching the video data of the clip specified as an object for edit, and the command carbon button of various transition effects is displayed. in this case, as a command carbon button displayed The wipe carbon button which specifies the wipe effectiveness which switches an image as wipes and erases the image by which it is indicated by current by the new image, The slide carbon button which specifies the slide effectiveness which therefore switches a new image to making an old image slide like a paper play, The split carbon button for specifying the split effectiveness therefore switched to a new image that an old image is divided and it makes the divided image slide, The page turn carbon button for specifying the page turn processing which switches an image as turns over a page for the squeeze carbon button for specifying the squeeze processing which switches an image on an old image as opens a new image, and an old image etc. is prepared.

[0163] In this effect selection window 50, scroll button 50A of a longitudinal direction is displayed on the lower side location of area, and it is made as [ scroll / to a longitudinal direction / the command carbon button displayed ] by operating this scroll button 50A. Similarly, scroll button 50B of the vertical direction is displayed on the right-hand-side location of the effect selection window 50, and it is made as [ scroll / in the vertical direction / the command carbon button displayed ] by operating this scroll button 50B.

[0164] Intermediary \*\*\*\* [ as ] as which the transition effect will be automatically specified if it clicks the command carbon button corresponding to the transition effect for which it asks in such an effect selection window 50 after specifying the editing point of giving a TORAJISHIYON effect in the time-line window 51 in choosing a desired transition effect.

[0165] The library window 33 is the area for displaying a clip in a list as a result of the raw material clip registered into the clip database CDB. This library window 33 is made by clicking the place of that title bar and extending window area as [ display / the whole library window 33 / as shown in this drawing 12 ], although only the title bar is usually displayed as shown in drawing 10 or drawing 11 .

[0166] In the library window 33, as shown in this drawing 12 , therefore, each clip is displayed on card-like graphical display 33A. In this case, therefore, card-like graphical display 33A is constituted by still picture display 33B, attribute display 33C, and clip name display 33D. It is made by still picture display 33B as [ display / the still picture of the Inn point of the clip or an out point ], and, thereby, an operator can grasp easily in that in which the screen displayed on the still picture display 33B is seen, and the clip is formed by what kind of video data.

[0167] The alphabetic character "MC" MC [ "FC" which shows the attribute of the clip, or ] Becoming is displayed on attribute display 33C. In this case, it is shown that "FC" is a clip as a result of generating that clip as a result of edit processing, and it is shown that "MC" is the raw material clip which that clip only took out from the source video data. Thus, by having displayed the information which shows an attribute, an operator can see the display and can grasp easily whether the clip is a result clip or it is a raw material clip. When the clip is generated, the clip name which the operator added is displayed on clip name display 33D. In addition, this clip name is registered into the clip database CDB as clip management data so that it may mention later.

[0168] The clip for edit can be easily chosen from the already registered clips in this way by having displayed in a list the clip already registered into the clip database CDB in the library window 33.

[0169] In addition, if scroll button 33E is displayed on the right-hand-side location of this library window 33 and this scroll button 33E is operated, this library window 33 can be scrolled in the vertical direction, and all the clips registered into the library window 33 concerned can be displayed. \*\*\*\*\* is also made [ choosing the clip or ] with the clip which is not actual condition vanity \*\*\*\* by this.

[0170] The time-line window 51 is the area for arranging the clip for edit in on a time-axis, and specifying the content of edit. Naturally as a time-line window 51 displayed by the edit module EM, the thing about edit processing is displayed. This time-line window 51 was roughly divided, and is divided into time code display area (Time Code), editing point display area (Edit Point), preview range display area (Preview), video and the effect appointed area (V), and the audio appointed area (A) sequentially

from the top.

[0171] Time code display area is area where the time code in an editing point is displayed. In addition, this time code is a time code on the time line of a clip, as a result of being generated based on the content of edit specified in this time-line window 51.

[0172] Editing point display area is area which therefore points to the point set up as an editing point to Mark Misumi. For example, when edit processing as shown in drawing 4 and drawing 9 is specified, it points to the editing points EP1-EP5 using Mark Misumi. However, in drawing 12, only the editing points EP2-EP4 are displayed on the relation which shows only the neighborhood which gives a transition effect in the time-line window 51. In addition, if it operates the scroll button of a longitudinal direction in the parameter setting-out window 52 so that it may mention later in displaying the editing point EP 1 and the editing point EP 5, the graphical image in the time-line window 51 can be scrolled to a longitudinal direction, and the editing point EP 1 and the editing point EP 5 can be displayed.

[0173] When the preview carbon button and BIYUU carbon button which were mentioned above are operated in preview range display area, it is the area which shows the range of the video data displayed on the preview screen-display window 36. Since between the editing point EP 4 and the editing points EP 5 is set up as a display rectangle from between the editing point EP 1 and the editing points EP 2 in the case of this example, the bar in which that section is shown is displayed.

[0174] Video and the effect appointed area are divided into the 1st for specifying the clip for edit and the 2nd video area (Video-L1, Video-L2), and the effect area (Effect) for specifying the transition effect given to the clip for [ the ] edit.

[0175] Since the cel which shows the clip will be displayed if a desired clip is clicked in the library window 33 or the clip tree window 31 when specifying the clip for edit in the 1st or 2nd video area, if the cel is put on the 1st or 2nd video area, the clip will be set as the 1st or 2nd video area, and will be registered as a clip for edit. for example, a result -- clip FC-008 -- clicking -- that cel -- the 1st video area -- placing -- a result -- clip FC- if 009 is clicked and that cel is put on the 2nd video area, it is shown in this drawing 12 -- as -- the 1st and 2nd video area -- respectively -- a result -- clip FC- 008 and FC-009 are set up. In addition, the video data of the clip set as the 1st video area turns into an old video data, and the video data of a clip set as the 2nd video area turns into a video data which switches newly.

[0176] Similarly, if it clicks a desired effect carbon button in the effect selection window 50 in specifying a transition effect in effect area, since the cel which shows the effect will be displayed, if the cel is put on effect area, it will be set up as an effect which the effect gives to the clip for edit. For example, if a wipe carbon button is clicked in the effect selection window 50, since the cel which shows wipe will be displayed, as that cel is shown in this drawing 12 also in effect area, wipe processing is set up as switch processing of clip FC-009 result clip FC-008 and a result.

[0177] The audio appointed area is the area for specifying the audio data sent out with a video data, and is divided into the 1st and 2nd audio area (Audio-1ch and Audio-2ch) in this case. In addition, in the 1st and 2nd audio area, when setting up audio data, it is the same as the setting-out approach in video area, and if a desired clip is clicked and the cel is put on the 1st or 2nd audio area, it will be set up as audio data which the audio data of the clip send out. Incidentally the audio data set as the 1st audio area are sent out to the 1st channel of stereophonic broadcasting, and the audio data set as the 2nd audio area are sent out to the 2nd channel of stereophonic broadcasting.

[0178] In addition, if a clip is double-clicked and chosen as a result of already being put on the 1st or 2nd video area and being displayed on it the module (namely, the synthetic module CM --) which created the clip as a result While being displayed on the time-line window on GUI of the module with which the content of edit which the special effect module SM or the edit module EM is started, and is given to the clip as a result corresponds The parameter set up to the clip as a result is displayed on a parameter setting-out window.

[0179] The parameter setting-out window 52 is area which sets up the parameter of the transition effect specified by an operator. In this parameter setting-out window 52, a click of the effect carbon button of the effect selection window 50 displays the parameter setup screen about that clicked effect. For example, if a wipe carbon button is clicked in the effect selection window 50 and wipe processing is

specified, the parameter setup screen about wipe processing as shown in drawing 12 will be displayed on this parameter setting-out window 52.

[0180] As a parameter in wipe processing, as shown in this drawing 12 The aspect ratio (Aspect) which shows the aspect ratio of a wipe pattern, and the angle type which specifies the include angle of a wipe pattern (Angle), The speed which specifies the rate of the wipe pattern at the time of a screen change-over (Speed), The level modulation (H Mod) which specifies the fluctuation given to the horizontal direction of a wipe pattern edge, and the vertical modulation (H Mod) which specifies the fluctuation given to the perpendicular direction of a wipe pattern edge occur. The value of these parameters is made as [ set / as any value / it / between the maximum setting range MAX on the basis of a default (= "0"), and the minimum setting range MIN ]. However, about the parameter of speed, the default is set as the minimum setting range MIN, and it is [ from a default to the maximum set point MAX and ] intermediary \*\*\*\* as adjustable range.

[0181] The parameter setting-out window 52 and the time-line window 51 mentioned above are intermediary \*\*\*\* [ as ] which can determine the modification point of a parameter while looking at the content of edit processing which the axis of abscissa (namely, time-axis) was in agreement, and was specified in the time-line window 51. A longitudinal direction can be made to scroll the graphical image in this parameter setting-out window 52 by incidentally operating scroll button 52A in the lower side location of the parameter setting-out window 52 about the this direction of an axis of abscissa, i.e., a longitudinal direction. At this time, since, as for the time-line window 51 and the parameter setting-out window 52, the axis of abscissa corresponds, the graphical image in the time-line window 51 concerned and the graphical image in the parameter setting-out window 52 interlock, and are simultaneously scrolled by the longitudinal direction. In addition, the graphical image in the parameter setting-out window 52 concerned can be scrolled in the vertical direction by operating scroll button 52B in the right-hand-side location of the parameter setting-out window 52 about the vertical direction.

[0182] In setting up the parameter of wipe processing actually here, it specifies the item which clicks a desired item and carries out a parameter setup after this out of the parameter item first displayed on the left corner of the parameter setting-out window 52. Then, while deciding the point which changes a parameter, looking at the content specified in the time-line window 51, the set point is decided and an axis of ordinate clicks the location corresponding to the fixed point and fixed set point in the parameter setting-out window 52 in which an axis of abscissa consists of a time-axis with parameter value. Thereby, the parameter value and the parameter modification point corresponding to the clicked location are automatically registered into the clip database CDB.

[0183] For example, if the place of the value for which it will wish if you want to bet the aspect ratio of a wipe pattern on the editing point EP 4, and to enlarge it gradually from the editing point EP 2 as shown in drawing 12 is clicked in order and it goes, the value will be registered automatically. In addition, a value from which the aspect ratio of a wipe pattern changes continuously is automatically registered by interpolation processing between the points and the points specified by an operator.

[0184] If the place of the value for which it will wish if similarly it enlarges gradually, covering the angle type of a wipe pattern over the editing point EP 3 from the editing point EP 2, and it applies to the editing point EP 4 from the editing point EP 3, and a wipe pattern is gradually leaned to hard flow and it is made to want to go is clicked in order and it goes, the value will be registered automatically. In addition, a value from which a wipe pattern changes continuously is automatically registered by interpolation processing between the points and the points specified by an operator also in this case. It can be decided to be arbitration by setting out whether incidentally it interpolates linearly or it interpolates in a spline curve. In this example, since it is set up so that it may interpolate in a spline curve about an angle type, it is set as a \*\*\*\*\* value by the spline curve between the points specified by an operator.

[0185] Moreover, if the place of the value for which it will wish if the editing point EP 2 to the editing point EP 3 fixes speed of a wipe pattern, it is applied to the editing point EP 4 from the editing point EP 3 and you want to gather speed gradually can be clicked in order, the value will be registered automatically. In addition, a value from which the speed of a wipe pattern changes continuously is

automatically registered by interpolation processing between the points and the points specified by an operator also in this case.

[0186] In this way, if a desired value is set up to the parameter of a transition effect in this parameter setting-out window 52, the value of that parameter will be registered into the clip database CDB, and a transition effect will be given to the video data of the clip for edit based on the value of that registered parameter. In addition, as this parameter setting-out window 52 is shown in drawing 12, the value of the set-up parameter can be made to be able to respond with an editing point, it is made as [ display / in the shape of / which made the axis of abscissa time amount and made the axis of ordinate parameter value / a graph ], an operator can see that display by this, and it can grasp visually what kind of value was set up to which timing to which parameter at a glance.

[0187] The content display window 38 of edit is the area for therefore displaying the content of edit therefore specified that it mentioned above in the time-line window 51 on a graphical image. As mentioned above in the time-line window 51, when two clip FC-008 and edit processing which therefore switches FC-009 to wipe processing are specified, a graphical image which sandwiched the graphical image which shows wipe processing in a completely different class by the cylindrical graphical image which shows each clip is displayed. Thereby, an operator can see this display and can grasp easily what kind of content of edit was directed as a whole. As shown especially in this drawing 12, when only some range is displayed in the time-line window 51, the whole content of processing is understood, and if \*\*\*\*\* looks at this content display window 38 of edit, it can grasp the whole content of processing easily.

[0188] (5) In the edit system 1 by management method this invention of the clip management data in a clip database, it is made and be so that all clips may be registered into the clip database CDB, as a result of being generated by editing into a raw material clip or its raw material clip therefore. As data registered into the clip database CDB, it roughly divides and there are a clip video data of a clip and clip management data for managing the clip video data as a result of a raw material clip. This term explains the management method of this clip management data.

[0189] Drawing 13 is the database for clip management data formed in the clip database CDB (mainly RAM21B), when the edit processing shown in drawing 7, drawing 8, and drawing 9 is directed. As shown in this drawing 13, the database for managing this clip management data is roughly divided, and, therefore, is constituted by a clip ID code, a clip name, an attribute, the pointer to image data, DEYURESHIYON, a high order link place ID code, a low order link place ID code, validity / invalid flag, and activity data.

[0190] A clip ID code is the identification number of the serial number automatically given to the order registered as a clip to the clip concerned. Therefore, the clip registered based on this clip ID code is discriminable.

[0191] the clip of the attribute of a clip is a mere raw material clip -- or it is data for identifying whether it is a clip as a result of being generated by editing a raw material clip. In the case of a raw material clip, the code "M" is registered into the place of the attribute of this clip, and the code "F" is registered when it is a result clip.

[0192] A clip name is a name for clip discernment given to the clip. In this example, by "001", the clip ID code shows the example which gave the identifier of "MC-001" automatically as that clip name, when the attribute of \*\*\*\*\* and a clip is "M." In addition, this clip name can also give the identifier of arbitration according to a user's idea. Incidentally, the clip name displayed on clip name display 33D of the library window 33 is this clip name.

[0193] The pointer to image data is a pointer in which the start address of the clip video data which consisted of 8 bytes of data and was recorded on the video disc recorder 5 is shown. In this edit system 1, since the clip video data is memorized by the video disc recorder 5 which has two or more hard disks, the pointer to this image data has pointed out the logical address of that hard disk array.

[0194] DEYURESHIYON is a time code showing the playback period of the clip video data of the clip. That is, it is a time code showing the time amount from the beginning of the clip video data to an end.

[0195] A high order link place ID code is a clip ID code of the clip linked as a high order clip to the clip.

For example, since the clip ID code links raw material clip MC-001 whose a clip ID code is "001" to clip FC-008 the result of "008", as a result, the clip ID code "008" of clip FC-008 is registered as a high order link place ID code.

[0196] in addition, the top clip -- in the case of the clip which does not have a high order clip for an intermediary \*\*\*\* reason, "000" is registered as a high order link place ID code. For example, for \*\*\*\*\* in which join clip FC-010 have a high order clip, and this reason, "000" is registered as a high order link place ID code. If a high order link place ID code is "000" by this, it can grasp easily that it is the top clip.

[0197] A low order link place ID code is a clip ID code of the clip linked as a low order clip to the clip. For example, as a result of a clip ID code's being "008", raw material clip MC-001, MC-002, and MC-003 link to clip FC-008 as a low order clip, respectively. In that case, raw material clip MC-001 are specified as the 3rd layer L3, raw material clip MC-002 are specified as the 2nd layer L2, and raw material clip MC-003 are specified as the 1st layer L1. Therefore, "003" is registered as a clip ID code of the clip specified as \*\*\*\*\* and the 1st layer L1 with the low order clip of result clip FC-008. "002" is registered as a clip ID code of the clip specified as \*\*\*\*\* and the 2nd layer L2 with the low order clip of result clip FC-008. "001" is registered as a clip ID code of the clip specified as \*\*\*\*\* and the 3rd layer L3 with the low order clip of result clip FC-008. In addition, it can grasp easily which low order clip is specified as which layer by having matched with the layer the low order clip linked to low order in this way, and having managed it.

[0198] In addition, in the case of a clip without a low order clip, no data are registered as a low order link place ID code. for example, \*\*\*\*\* which has a low order clip since raw material clip MC-001 are a mere raw material clip and this sake -- as a low order link place ID code -- a blank -- intermediary \*\*\*\*

[0199] Validity / invalid flag is flags with which the clip expresses whether it is an effective (Enable) clip or it is an invalid (Disable) clip. In this case, if the clip is effective, the code of "E" will be registered, and the code of "D" will be registered if the clip is invalid. When the content of edit specified is incidentally performed and the clip video data as an edit result is generated Although the content of edit was once performed when the clip video data was not generated and the clip video data was generated since an effective flag was registered and the content of edit was not performed The flag of an invalid is registered when the actual content of edit and the clip video data are not in agreement, since the clip from which the content of edit and their raw material are got after that was changed. In addition, if the database for these clip management data is referred to by having such validity / an invalid flag as clip management data, it can grasp easily whether a clip is effective or invalid.

[0200] Activity data are data in which the content of edit specified to the clip is shown. Therefore, although a certain activity data are registered to clip FC-008, FC-009, and FC-010 as a result of being generated by edit therefore, to raw material clip MC-001 to raw material clip MC-007 which therefore are not generated, nothing is registered into edit as activity data.

[0201] As shown in this drawing 13 , activity data are roughly divided and are divided into a module ID code, editing point data, and image-processing data. Among these, a module ID code is an identification number which shows the module used in the editing task which creates a clip as a result. In this case, if the synthetic module CM was used, the code of "C" will be registered, if the special effect module SM was used, the code of "S" will be registered, and the code of "E" will be registered if the edit module EM was used.

[0202] Moreover, editing point data are data which consist of a time code corresponding to all the editing points specified to the clip as a result, and the editing point of those. Moreover, image-processing data consist of synthetic (composite) data, special effect (special effect) data, and edit (edit) data. Among these, complex data is data which consist of parameter value specified in synthetic processing, special effect data are data which consist of parameter value specified in special effect processing, and edit data are data which consist of parameter value specified in edit processing.

[0203] In addition, when the content of edit processing is corrected, the content of these clip management data is rewritten at any time based on the new content of edit. However, it is not

eliminated, but another clip ID code and a clip name are added, and the past clip management data is held as an object for backup. For example, when the content of the special effect processing to result clip FC-009 is corrected, as shown in drawing 14 , the clip management data before correction is held as backup.

[0204] That is, when new special effect processing is directed to result clip FC-009, based on the content of new special effect processing, the editing point data after correction and the special effect data after correction are generated, and it registers with the place (namely, place whose clip ID data are "009") this [ whose ] is a clip before correction, respectively as activity data. The editing point data before the correction registered as activity data on the other hand before new special effect processing was directed, and the special effect data before correction are registered into another field in a database as clip management data for backup based on those identification information, after a clip ID code "009BK1" and a clip name "FC-009BK1" are newly assigned. However, validity / invalid flag is corrected to the code of "D" which shows an invalid in the clip management data registered as backup.

[0205] Thus, even when clip FC-009 are not pleasing by leaving the clip management data before correction as backup the result after correction, based on the clip management data before the correction which it has left as backup, it can return to clip FC-009BK1 easily the result before correction.

[0206] An example is raised and explained below about the editing point data registered as activity data mentioned above here, complex data, special effect data, and edit data. Editing point data are first explained using drawing 1515 - drawing 17 .

[0207] When synthetic processing as shown in drawing 7 is directed to result clip FC-008, editing point data as shown in drawing 15 are registered. They are the time code of the Inn point which shows the start location of \*\*\*\*\* and its low order clip by the data for specifying which part editing point data use for the clip video data of a high order clip among the clip data of a low order clip as shown in this drawing 15 , the time code of the out point which shows that end location, and intermediary \*\*\*\* [ from ].

[0208] the time code of the Inn point of raw material clip MC-003 specified as the 1st layer L1 as shown in drawing 7 -- a time-line t3 top -- setting -- "00:00:31:02" -- the location of an intermediary cage and its Inn point -- a result -- clip FC- the time code "00:00:00:00" is supported on the time line t8 of 008. Therefore, in editing point data, as shown in drawing 15 , it matches and registers with the place the time code "00:00:00:00" of result clip FC-008 and whose time code "00:00:31:02" of the Inn point of raw material clip MC-003 are the editing points EP 1. moreover, the time code of the out point of raw material clip MC-003 specified as the 1st layer L1 as shown in drawing 7 -- a time-line t3 top -- setting - - "00:05:18:02" -- the location of an intermediary cage and its out point -- a result -- clip FC- the time code "00:04:47:00" is supported on the time line t8 of 008. Therefore, in editing point data, as shown in drawing 15 , it matches and registers with the place the time code "00:04:47:00" of result clip FC-008 and whose time code "00:05:18:02" of the out point of raw material clip MC-003 are the editing points EP 8. The editing point of raw material clip MC-003 therefore specified as the time code of this Inn point and an out point as the 1st layer L1 will be decided.

[0209] Similarly, it matches with the time code of result clip FC-008, respectively, and the time code "00:00:51:00" of the Inn point of raw material clip MC-002 specified as the 2nd layer L2 and an out point and "00:03:04:20" are registered, as shown in drawing 15 . Similarly, it matches with the time code of result clip FC-008, respectively, and the time code "00:01:40:03" of the Inn point of raw material clip MC-001 specified as the 3rd layer L3 and an out point and "00:02:45:48" are registered, as shown in drawing 15 .

[0210] Moreover, when special effect processing as shown in drawing 8 is directed to result clip FC-009, editing point data as shown in drawing 16 are registered. In the case of special effect processing, as shown in this drawing 1616 , in editing point data, the time code of a low order clip and the time code of a high order clip also match \*\*\*\*\* , and it is registered. That is, it matches with the time code of result clip FC-009, and the time code "00:10:12:00" of the Inn point of raw material clip MC-004 specified as the 1st layer L1 and an out point and "00:12:18:00" are registered, as shown in drawing 16 .

[0211] Moreover, when edit processing as shown in drawing 9 is directed to result clip FC-010, editing

point data as shown in drawing 17 R> 7 are registered. In the case of edit processing, as shown in this drawing 17, in editing point data, the time code of a low order clip and the time code of a high order clip also match \*\*\*\*\*, and it is registered. As a result of being specified as the 1st layer L1, namely, the time code "00:01:01:20" of the Inn point of clip FC-008 and an out point and "00:04:43:00" As shown in drawing 17, while matching with the time code of result clip FC-010 and being registered As a result of being specified as the 2nd layer L2, it matches with the time code of result clip FC-010, and the time code "00:00:00:50" of the Inn point of clip FC-009 and an out point and "00:02:06:00" are registered, as similarly shown in drawing 17.

[0212] Then, complex data is explained using drawing 18. Complex data is data showing the synthetic ratio (gain) when compounding the video data of the clip specified as each layer, and is made as [ take / as a value / the value to "0" - "100" ]. In addition, if the value of complex data is "0", it means compounding the video data to compound at 0% of a rate, and the lower layer video data means that it is thoroughly transparent and visible in this case. Moreover, if the value of complex data is "50", it means compounding the video data to compound at 50% of a rate, and the video data of a lower layer [ the rate like one half ] means that it is transparent and visible in this case. the video data which will be compounded if the value of complex data is furthermore "100" -- 100 It means compounding at a rate of percent and the lower layer video data means that hide thoroughly and it is not visible in this case.

[0213] The example of complex data is shown in drawing 18 here. This drawing 18 is the database of the complex data generated when complex data (gain) was specified using the parameter setting-out window 35 shown in drawing 10, after specifying synthetic processing as shown in drawing 7.

[0214] If gain "100" is specified in the location of the editing point EP 1, and the location of the editing point EP 8 to raw material clip MC-003 specified to the 1st layer L1, gain "100" will be registered into the column corresponding to the editing point EP 1 and the editing point EP 8 as shown in this drawing 18. Moreover, since the linear interpolation based on the value is made using the editing points EP1 and EP8 concerned as a key point between the editing point EP 1 and the editing point EP 8, gain "100" is registered automatically ("--" shows among drawing that the interpolation value is registered).

[0215] Moreover, raw material clip MC-002 specified to the 2nd layer L2 are received. If gain "59" is specified in the location of the editing point EP 2, gain "100" is specified in the location of the editing point EP 3 and gain "0" is specified in the location of the editing point EP 6, as shown in this drawing 18 Gain "59", "100", and "0" are registered into the column corresponding to the editing points EP2, EP3, and EP6 in order, respectively. Also in this case, the linear interpolation based on that value is made using the editing points EP2, EP3, and EP6 concerned as a key point between the editing point EP 2 and the editing point EP 3 and between the editing point EP 3 and the editing point EP 6, and a gain value which continues linearly is registered automatically. Moreover, raw material clip MC-001 specified to the 3rd layer L3 are received. If gain "100" is specified in the location of the editing point EP 4, gain "67" is specified in the location of the editing point EP 5 and gain "51" is specified in the location of the editing point EP 7, as shown in this drawing 18 Gain "100", "67", and "51" are registered into the column corresponding to the editing points EP4, EP5, and EP7 in order, respectively. Also in this case, similarly, the linear interpolation based on that value is made from the editing point EP 4, using the editing points EP4, EP5, and EP7 concerned as a key point between the editing point EP 5, the editing point EP 5, and the editing point EP 7, and a gain value which continues linearly is registered automatically.

[0216] If such complex data is registered in this way and an editing task is performed, while the value of complex data will be switched one by one to the timing of each editing point It is switched to the value interpolated between each editing point one by one. The result, The video image of raw material clip MC-002 specified by the layer L2 from the event of the editing point EP 2 on the video image of raw material clip MC-003 specified as the layer L1 appears gradually. In a video image with which the video image of raw material clip MC-002 diminishes gradually after the editing point EP 3, \*\*\*\*\*, And a video image with which the video image of raw material clip MC-001 specified as the layer L3 at the event of the editing point EP 4 appears, and the video image of raw material clip MC-001 diminishes gradually after that can be acquired.

[0217] Then, special effect data are explained using drawing 19 . Therefore, special effect data are constituted at the effect ID data showing the class of special effect processing fundamentally performed to the clip for edit, and its each parameter value of the specified special effect processing and period which performs the special effect processing.

[0218] The example of special effect data is shown in drawing 19 here. This drawing 19 is the database of the special effect data generated when a parameter setup was carried out using the parameter setting-out window 42 shown in \*\*\*\*\* and drawing 11 about the three-dimension image transformation shown in drawing 8 .

[0219] In this drawing 19 , it is the effect identification number assigned to three-dimension image transformation, and, as for "1025" registered as effect ID data, it turns out that three-dimension image transformation is therefore specified as this effect identification number "1025" as special effect processing. Moreover, "Loc X", "Loc Y", and "Loc Z" show the location (X, Y, Z) which is the parameter of three-dimension image transformation. "Rot X", "Rot Y", and "Rot Z" show the hand of cut (X, Y, Z) which is the parameter of three-dimension image transformation. "Asp" shows the aspect ratio which is the parameter of three-dimension image transformation, "Skew" shows the skew which is the parameter of three-dimension image transformation, and "Pers" shows the perspective value which is the parameter of three-dimension image transformation. as the period when it applies to the editing point EP 7 at, and is specified as it from the editing point EP 2 at, and three-dimension image transformation is specified by this as these parameters are shown in drawing 19 -- the editing point EP 2 -- a start point, and an intermediary cage and the editing point EP 7 -- an ending point -- intermediary \*\*\*\* -- things are understood easily. In addition, if the editing point data of drawing 16 explained previously are referred to, the concrete value of the start point of three-dimension image transformation and an ending point, i.e., a time code, can be grasped easily.

[0220] A parameter "Loc X" is received in the parameter setting-out window 42 shown in drawing 11 here. By the way, the editing points EP2, EP4, EP6, and EP7, respectively A coordinate value "0", Assignment of "0", "-1.6", and "-1.6" registers a coordinate value "0", "0", "-1.6", and "-1.6" into the column corresponding to the editing points EP2, EP4, EP6, and EP7, respectively, as shown in this drawing 19 . In this case, from the editing point EP 2, the linear interpolation based on that value is made from the editing point EP 4 and the editing point EP 4, using the editing points EP2, EP4, EP6, and EP7 concerned as a key point between the editing point EP 6, the editing point EP 6, and the editing point EP 7, and a coordinate value which continues linearly is registered automatically.

[0221] the same -- a parameter "Loc Y" -- receiving -- the editing points EP2, EP6, and EP7, if a coordinate value "0", "0", and "+2" are specified by the way, respectively The coordinate value corresponding to the column corresponding to the editing points EP2, EP6, and EP7 is registered. To a parameter "Loc Z", if a coordinate value "0", "+2.2", and "+2.2" are specified by the way, respectively, the coordinate value corresponding to the column of the editing points EP2, EP6, and EP7 of the editing points EP2, EP6, and EP7 will be registered.

[0222] Moreover, to a parameter "Rot X", if an angle of rotation "0", "-180", and "-102" are specified by the way, respectively, the angle of rotation corresponding to the column corresponding to the editing points EP2, EP5, and EP7 of the editing points EP2, EP5, and EP7 will be registered. In addition, in this case, since interpolation by the spline curve is set up, the value which carries out \*\*\*\*\* continuation is automatically registered into a spline curve from the editing point EP 2, respectively between the editing point EP 5, the editing point EP 5, and the editing point EP 7. In addition, especially about the inside \*\*\*\* parameter "Rot Y" of assignment, "Rot Z", "Asp", "Skew", and "Pers", "0" is automatically registered as a default.

[0223] If the parameter about such three-dimension image transformation is registered in this way and an editing task is performed, while the value of a parameter will be switched one by one to the timing of each editing point, a video image which moves in a three-dimension space top and goes can be acquired being switched to the value interpolated between each editing point one by one, consequently rotating focusing on the X-axis.

[0224] Then, edit data are explained using drawing 20 . Therefore, edit data are constituted at the effect

ID data showing the class of transition effect fundamentally given to the clip for edit, the parameter value about the specified transition effect, and the period that gives the transition effect.

[0225] The example of edit data is shown in drawing 20 here. This drawing 20 is the database of the edit data generated when a parameter setup was carried out using the parameter setting-out window 52 which specified wipe processing as shown in drawing 9 R> 9 as a transition effect, and was shown in drawing 12.

[0226] the time of "0001" registered as effect ID data switching from the image of the 1st video data to the image of the 2nd video data in this drawing 20 -- the right-hand side from the left-hand side of a screen -- \*\* -- it is the effect identification number assigned to wipe processing which switches once, and means that wipe processing of this kind is therefore specified as this effect identification number "0001" as a transition effect.

[0227] in addition, when the effect identification number "1300" is registered as effect ID data It means that wipe processing of a class which switches once is specified. the time of switching from the image of the 1st video data to the image of the 2nd video data -- the center from the ends of a screen -- \*\* -- When the effect identification number "2123" is registered as effect ID data, it means that the BEJI turn processing which switches by sensibility to which the image of the 1st video data turns over a page exactly is specified.

[0228] Moreover, "Angle" is a parameter which shows the include angle of a wipe pattern, "Aspect" is a parameter which shows the aspect ratio of the wipe pattern of a transition effect, and "H-Mod" and "V-Mod" are [ "Speed" is a parameter which shows a change-over rate, and ] parameters which show fluctuation of a wipe pattern, respectively. as the period when it applies to the editing point EP 4 at, and is specified as it from the editing point EP 2 at, and wipe processing is specified by this as these parameters are shown in drawing 20 -- the editing point EP 2 -- a start point, and an intermediary cage and the editing point EP 4 -- an ending point -- intermediary \*\*\*\* -- things are understood easily. In addition, if the editing point data of drawing 17 explained previously are referred to, the concrete value of the start point of wipe processing and an ending point, i.e., a time code, can be grasped easily.

[0229] In the parameter setting-out window 52 shown in drawing 12 here, to a parameter "Aspect", if a value "0" and "+25" are specified by the way, respectively, as shown in this drawing 20, the value corresponding to the column corresponding to the editing points EP2 and EP4 of the editing points EP2 and EP4 will be registered, respectively. In this case, the linear interpolation based on that value is made using the editing points EP2 and EP4 concerned as a key point between the editing point EP 2 and the editing point EP 4, and a value which continues linearly is registered automatically.

[0230] Moreover, to a parameter "Speed", if a value "20", "20", and "100" are specified by the way, respectively, as shown in this drawing 20, the value corresponding to the column corresponding to the editing points EP2, EP3, and EP4 of the editing points EP2, EP3, and EP4 will be registered, respectively. Also in this case, similarly, the linear interpolation based on that value is made from the editing point EP 2, using the editing points EP2, EP3, and EP4 concerned as a key point between the editing point EP 3, the editing point EP 3, and the editing point EP 4; and a value which continues linearly is registered automatically.

[0231] On the other hand, to a parameter "Angle", if a value "0", "+180", and "-180" are specified by the way, respectively, as shown in this drawing 20, the value corresponding to the column corresponding to the editing points EP2, EP3, and EP4 of the editing points EP2, EP3, and EP4 will be registered, respectively. In this case, since interpolation by the spline curve is set up, the value which carries out \*\*\*\*\* continuation is automatically registered into a spline curve from the editing point EP 2, respectively between the editing point EP 3, the editing point EP 3, and the editing point EP 4. In addition, especially about the inside \*\*\*\* parameter "H Mod" of assignment and "V Mod", "0" is automatically registered as a default.

[0232] it be \*\*\*\*\* to acquire a video image of a transition effect it be switch to the value interpolated between each edit point one by one, consequently a change-over rate carry out [ image ] sequential change, and go to the configuration and include angle list of a wipe pattern, while the value of a parameter will be switch one by one to the timing of each edit point, if the parameter about such wipe

processing be register in this way and an editing task be perform .

[0233] (6) The various procedure in an edit system, then this term explain the operations sequence of each processing in this edit system 1 using a flow chart. In addition, therefore, all the contents of the operations sequence explained henceforth are carried out to the actuation of CPU21 based on an application program.

[0234] If predetermined starting processing is first performed in this edit system 1, CPU21 will start control-module CNTM in the step SP 1 shown in drawing 21 , and will display a top menu on display 2B of a workstation 2 in the continuing step SP 2.

[0235] In the following step SP 3, CPU21 judges the selected menu item in a step SP 7 from the continuing step SP 4, when it judges whether a certain menu item was chosen in the top menu, consequently a certain menu item is chosen.

[0236] When the invocation command of the edit module EM is chosen as a result of the decision in a step SP 4 When it progresses to a step SP 8, starting processing of the edit module EM is performed and the invocation command of the synthetic module CM is chosen as a result of the decision in a step SP 5, CPU21 When it progresses to a step SP 9, starting processing of the synthetic module CM is performed and the invocation command of the special effect module SM is chosen as a result of the decision in a step SP 6, it progresses to a step SP 10 and starting processing of the special effect module SM is performed.

[0237] When the command which opens the file of a clip on the other hand as a result of decision of a step SP 7 as a result of already having been registered is chosen, CPU21 starts the module (namely, the edit module EM, the synthetic module CM, or a special effect module (SM)) which has recognized the module currently used with a clip as a result of being chosen in the following step SP 11, and has been recognized in the following step SP 12. In addition, in a step SP 11, by referring to the activity data registered into the clip database CDB, CPU21 performs module recognition of a clip, as a result of [ the ] being chosen.

[0238] Here shows concretely starting processing of the edit module EM in a step SP 8 to drawing 22 . If starting of the edit module EM is directed, CPU21 will display GUI of the edit module EM on display 2B of a workstation 2 first in the ON \*\*\*\* step SP 21 from a step SP 20. In the following step SP 22 CPU21 When it judges whether starting of the edit module EM was directed through the previous step SP 12 and starting of the edit module EM is directed through a step SP 12 The content of edit processing is displayed in read-out and the time-line window 51 of GUI for edit modules mentioned above based on the clip management data registered into the clip database CDB in the content of edit processing of a clip as a result of progressing to a step SP 23 and being specified as it.

[0239] On the other hand, if it is not starting through a step SP 12 but new starting as a result of the decision in a step SP 22, CPU21 will progress to a step SP 24, and will make registration preparations of clip management data in preparation for the edit processing newly performed from now on. It prepares for the content of edit processing newly directed concrete from now on, and the area which registers clip management data is secured on the clip database CDB. If processing of these step SP 23 or a step SP 24 is performed, CPU21 will progress to the following step SP 25, and will shift to actual edit processing.

[0240] Moreover, starting processing of the synthetic module CM in a step SP 9 is concretely shown in drawing 23 . If starting of the synthetic module CM is directed, CPU21 will display GUI of the synthetic module CM on display 2B of a workstation 2 first in the ON \*\*\*\* step SP 31 from a step SP 30. In the following step SP 32 CPU21 When it judges whether starting of the synthetic module CM was directed through the previous step SP 12 and starting of the synthetic module CM is directed through a step SP 12 The content of synthetic processing is displayed in read-out and the time-line window 34 of GUI for synthetic modules mentioned above based on the clip management data registered into the clip database CDB in the content of synthetic processing of a clip as a result of progressing to a step SP 33 and being specified as it.

[0241] On the other hand, if it is not starting through a step SP 12 but new starting as a result of the decision in a step SP 32, CPU21 will progress to a step SP 34, and will make registration preparations of clip management data in preparation for the synthetic processing newly performed from now on. It

prepares for the content of synthetic processing newly directed concrete from now on, and the area which registers clip management data is secured on the clip database CDB. If processing of these step SP 33 or a step SP 34 is performed, CPU21 will progress to the following step SP 35, and will shift to actual synthetic processing.

[0242] Moreover, starting processing of the special effect module SM in a step SP 10 is concretely shown in drawing 24. If starting of the special effect module SM is directed, CPU21 will display GUI of the special effect module SM on display 2B of a workstation 2 first in the ON \*\*\*\* step SP 41 from a step SP 40. In the following step SP 42 CPU21 When it judges whether starting of the special effect module SM was directed through the previous step SP 12 and starting of the special effect module SM is directed through a step SP 12 The content of special effect is displayed in read-out and the time-line window 41 of GUI for special effect modules mentioned above based on the clip management data registered into the clip database CDB in the content of special effect of a clip as a result of progressing to a step SP 43 and being specified as it.

[0243] On the other hand, if it is not starting through a step SP 12 but new starting as a result of the decision in a step SP 42, CPU21 will progress to a step SP 44, and will make registration preparations of clip management data in preparation for the special effect processing newly performed from now on. It prepares for the special effect processing newly directed concrete from now on, and the area which registers clip management data is secured on the clip database CDB. If processing of these step SP 43 or a step SP 44 is performed, CPU21 will progress to the following step SP 45, and will shift to actual special effect processing.

[0244] The detail of the edit processing shown in the step SP 25 of drawing 22 here is shown in drawing 25. In addition, although a graphic display is omitted here, the synthetic processing shown in the step SP 35 of drawing 23 and the special effect processing shown in the step SP 45 of drawing 24 are almost the same as the edit processing shown in this drawing 25, and that content of processing only replaces that difference with synthetic processing or special effect processing.

[0245] As shown in drawing 25, CPU21 The input which directs edit processing in the ON \*\*\*\* step SP 51 from a step SP 50 first judges [ consequently ] whether it is \*\*\*\*\* (for example, the actuation which used the actuation or the parameter setting-out window 52 which used the time-line window 51 judges whether it is \*\*\*\*\*). To a \*\*\*\*\* case, such an input progresses to a step SP 52, creates the edit data corresponding to an input, and sets [ case ] the validity / invalid flag of a clip as the clip database CDB suitably by making it into clip management data at an invalid as a result of [ its ] writing. In addition, it is intermediary \*\*\*\* [ as ] which does not only overwrite CPU21, but assigns another clip ID code to a \*\*\*\*\* case to the clip management data before correction, and is held to another field to it by the input for reading a clip, as a result of already being registered, and correcting the content. Thereby, the clip management data before correction can also be read later.

[0246] After processing of this step SP 52 finishes, CPU21 progresses to the following step SP 53. In a step SP 53, CPU21 judges whether as a result of creating at a step SP 52, the clip of the high order to a clip exists by referring to the high order link place ID code of clip management data. Consequently, when there is no clip of a high order and the clip of return and a high order exists in a step SP 51, it progresses to a step SP 54, all validity / invalid flags of the clip management data which manages the clip of the high order are set as an invalid, and it returns to a step SP 51 after that. In addition, when progressing to a step SP 54, it is the case where in almost all cases a clip is corrected as a result of already being registered. Moreover, the clips of a high order are all clips, as a result of considering further not only the high order clip that considers a clip as a low order clip as a result of creating at a step SP 52 but the high order clip as a low order clip and using the clip as a raw material as a result at least also including a clip (this is also henceforth called a related clip).

[0247] For example, it considers as \*\*\*\*\* at relation as the relation of a clip shows to drawing 26 as a result of each already registered raw material clip. That is, therefore result clip FC-G is generated by raw material clip MC-G1 and MC-G2, and, as a result, result clip FC-E is generated considering clip FC-G, raw material clip MC-E1, and MC-E2 as a raw material. Moreover, as a result, result clip FC-C is generated considering clip FC-E and raw material clip MC-C1 as a raw material.

[0248] Moreover, result clip FC-F is generated considering raw material clip MC-F1, MC-F2, and MC-F3 as a raw material, and, as a result, result clip FC-D is generated considering clip FC-E as a raw material as a result of clip FC-F, raw material clip MC-D1, and MC-D2. moreover, a result -- clip FC-B -- a result -- clip FC-D and FC-C, and raw material clip MC-B1 -- as a raw material -- generating -- having -- \*\*\*\* -- a result -- clip FC-A -- a result -- clip FC-B -- as a raw material -- generating -- having -- \*\*\*\*

[0249] When there is relation during such a clip, in the limitation which does not once add correction especially after generating the clip video data of a result clip, respectively, the validity / invalid flag of the clip management data which manages these clips are usually set up effectively. However, although the validity / invalid flag of result clip FC-E are naturally changed into an invalid when correction is added, for example to the content of edit processing of result clip FC-E As a result of considering clip FC-E as a low order clip not only result clip FC-E but the result concerned, clip FC-C and FC-D, Clip FC-B and as a result of considering clip FC-C and FC-D as a low order clip the result concerned furthermore, and considering clip FC-B as a low order clip the result concerned further, validity / invalid flag is changed into an invalid also for all clip FC-A.

[0250] It returns to explanation of the flow chart again shown in drawing 25 . It progresses to the step SP 55 which the result of the decision in a step SP 51, especially the input of edit processing are made, and follows an inside \*\*\*\* case. In a step SP 55 CPU21 As a result of being displayed, when whether the clip was chosen as a result of being displayed on the video area of the time-line window 51 judged, and a clip is chosen The module (namely, the synthetic module CM or a special effect module (SM)) which created the clip as a result in a step SP 56 is started, as a result of being displayed, a clip is chosen, and it progresses to an inside \*\*\*\* case at a step SP 58. In addition, the detail of a step SP 56 is mentioned later.

[0251] In a step SP 58, it progresses to a step SP 59, rerun processing is performed, an rerun command is inputted, and CPU21 returns to an inside \*\*\*\* case through a step SP 26 at the original flow chart, when it judges whether the rerun command was inputted and an rerun command is inputted. In addition, therefore the BIYUU carbon button or all BIYUU carbon button currently displayed on the GUI screen as the rerun command said here is clicked by mouse 2D, and it means that directions of BIYUU or all BIYUU were inputted. At the time of BIYUU or all BIYUU, the content of edit processing specified is performed actually, and since the video clip data of a clip are generated as a result, such an identifier is attached.

[0252] Concrete processing (namely, starting processing of a module) of the step SP 56 explained previously here is shown in drawing 27 R> 7. When a clip is chosen as a result of being displayed as shown in this drawing 27 , CPU21 reads the clip management data of a clip from a step SP 60 in the ON \*\*\*\* step SP 61, as a result of [ that ] being chosen. Next, with reference to the module ID code registered into the clip management data, in the following step SP 63, CPU21 starts the module (namely, the synthetic module CM or a special effect module (SM)) corresponding to the module ID code, and, as a result, displays the content of edit processing of a clip on the time-line window on GUI in a step SP 62.

[0253] Then, concrete processing (namely, rerun processing) of the step SP 59 explained previously is shown in drawing 28 . However, therefore in this drawing 28 , all of result clip FC-E, FC-D, FC-C, FC-B, and FC-A shall be made with the invalid processing of the step SP 54 which there shall be relation during a clip as shown in drawing 26 , and was explained previously.

[0254] As shown in this drawing 28 , when an rerun command is directed, CPU21 forms a stack memory on RAM21B first in the ON \*\*\*\* step SP 71 from a step SP 70, and as a result of being in that stack memory on a clip tree at the most significant, it pushes the clip management data of a clip. For example, in the example shown in drawing 26 , at least to Mogami, result clip FC-A is that of intermediary \*\*\*\*, and, as a result, pushes the clip management data of clip FC-A at a stack memory. In addition, a push said here means overlaying data in stack memory space.

[0255] In the following step SP 72, CPU21 judges whether the contents of the stack memory are empty. In now, in a step SP 71, since clip management data was pushed to the stack memory, data exist, and a

negative result is obtained. For this reason, CPU21 progresses to the following step SP 74.

[0256] In a step SP 74, CPU21 carries out pop [ of the clip management data ] by one clip from a stack memory, and judges whether the clip is effective based on the validity / invalid flag of the clip management data. In the example shown in drawing 26 , since result clip FC-A is made into the invalid, a negative result is obtained and it progresses to a step SP 75. In addition, it says reading the data which are said here and which are overlaid in stack memory space as it is pop from the top thing.

[0257] In a step SP 75, CPU21 judges whether as a result, all the low order clips of a clip are validity based on the clip management data read at the previous step SP 74. In this case, CPU21 judges whether all low order clips are validity by judging a low order clip based on the clip ID code registered there with reference to the low order link place ID code registered into the clip management data of a clip as a result, and referring to the validity / invalid flag of that low order clip from a clip database. In the example shown in drawing 26 , as a result of being the low order clip of result clip FC-A, clip FC-B is that of an invalid and intermediary \*\*\*\*, and a negative result is obtained and it progresses to the following step SP 77.

[0258] In a step SP 77, CPU21 pushes the clip management data of a clip to a stack memory again, as a result of carrying out pop like the point, and it progresses to the following step SP 78. In the example shown in drawing 26 , the clip management data of result clip FC-A will be again pushed to a stack memory. In a step SP 78, CPU21 pushes the clip management data of the clip made into the invalid among the low order clips of a clip as a result of re-pushing at a step SP 77 to one stack memory. In the example shown in drawing 26 , since low order clip FC-B of result clip FC-A is made into the invalid, as a result, the clip management data of clip FC-B is pushed by the stack memory.

[0259] Next, CPU21 judges again whether the inside of a stack memory is empty in return and here to a step SP 72. Since clip management data exists in a stack memory in now, a negative result is obtained and it progresses to the following step SP 74. At a step SP 74, CPU21 carries out pop [ of the clip management data ] by one clip from a stack memory, and judges whether as a result, a clip is effective based on the validity / invalid flag in the clip management data. In the example shown in drawing 26 , although reading appearance of the clip management data of result clip FC-B is carried out, since clip FC-B is made into the invalid as a result, a negative result is obtained and it progresses to the following step SP 75.

[0260] In a step SP 75, CPU21 judges whether as a result, all the low order clips of a clip are validity based on the clip management data read at the previous step SP 74. In the example of drawing 26 , since clip FC-C and FC-D are made into the invalid as a result of being the low order clip of result clip FC-B, a negative result is obtained and it progresses to the following step SP 77.

[0261] In a step SP 77, CPU21 pushes the clip management data of a clip to a stack memory again, as a result of carrying out pop like the point, and it progresses to the following step SP 78. In the example of drawing 26 , the clip management data of result clip FC-B is re-pushed. In the following step SP 78, CPU21 pushes the clip management data of the clip made into the invalid among the low order clips of a clip as a result of re-pushing at a step SP 77 to one stack memory. In the example of drawing 26 , the clip management data of result clip FC-C is pushed.

[0262] Next, CPU21 judges again whether the inside of a stack memory is empty in return and here to a step SP 72. In now, since it is not empty, a negative result is obtained, and it progresses to the following step SP 74. In a step SP 74, CPU21 carries out pop [ of the clip management data ] by one clip from a stack memory, and it judges whether as a result, a clip is effective based on the clip management data. In the example of drawing 26 , although reading appearance of the clip management data of result clip FC-C is carried out, since clip FC-C is invalid as a result, a negative result is obtained and it progresses to the following step SP 75.

[0263] In a step SP 75, CPU21 judges whether as a result, all the low order clips of a clip are validity based on the clip management data read at the previous step SP 74. In the example of drawing 26 , since clip FC-E is made into the invalid as a result of being the low order clip of result clip FC-C, a negative result is obtained and it progresses to the following step SP 77.

[0264] In a step SP 77, CPU21 pushes the clip management data of a clip to a stack memory again, as a

result of carrying out pop like the point, and it progresses to the following step SP 78. In the example of drawing 26, the clip management data of result clip FC-C is re-pushed. In the following step SP 78, CPU21 pushes the clip management data of the clip made into the invalid among the low order clips of a clip as a result of re-pushing at a step SP 77 to one stack memory. In the example of drawing 26, the clip management data of result clip FC-E is pushed.

[0265] Next, CPU21 judges again whether the inside of a stack memory is empty in return and here to a step SP 72. In now, since it is not empty, a negative result is obtained, and it progresses to the following step SP 74. In a step SP 74, CPU21 carries out pop [ of the clip management data ] by one clip from a stack memory, and it judges whether as a result, a clip is effective based on the clip management data. In the example of drawing 2626, although reading appearance of result clip FC-E is carried out, since clip FC-E is invalid as a result, a negative result is obtained and it progresses to the following step SP 75.

[0266] In a step SP 75, CPU21 judges whether as a result, all the low order clips of a clip are validity based on the clip management data read at the previous step SP 74. In the example of drawing 26, since all of clip MC-E1 and MC-E2 which are the low order clip of result clip FC-E, and FC-G are validity, an affirmation result is obtained and it progresses to a step SP 76.

[0267] In a step SP 76, as a result, CPU21 changes effectively the validity / invalid flag of the clip management data to a clip while, creating the clip video data of a clip as a result by performing edit processing using the clip video data of the clip specified as a raw material based on the activity data registered into clip management data. In the example of drawing 26, while creating the clip video data of result clip FC-E by performing edit processing using clip FC-G, MC-E1, and MC-E2 which are specified as a raw material, the validity / invalid flag of result clip FC-E are changed effectively.

[0268] Next, CPU21 judges again whether the inside of a stack memory is empty in return and here to a step SP 72. In now, since it is not empty, a negative result is obtained, and it progresses to the following step SP 74. In a step SP 74, CPU21 carries out pop [ of the clip management data ] by one clip from a stack memory, and it judges whether as a result, a clip is effective based on the clip management data. In the example of drawing 2626, although reading appearance of the clip management data of result clip FC-C is carried out, since clip FC-C is invalid as a result, a negative result is obtained and it progresses to the following step SP 75.

[0269] In a step SP 75, CPU21 judges whether as a result, all the low order clips of a clip are validity based on the clip management data read at the previous step SP 74. In the example of drawing 26, since clip FC-E and MC-C1 which are the low order clip of result clip FC-C are confirmed respectively, an affirmation result is obtained and it progresses to a step SP 76.

[0270] In a step SP 76, as a result, CPU21 changes effectively the validity / invalid flag of the clip management data to a clip while, creating the clip video data of a clip as a result by performing edit processing using the clip video data of the clip specified as a raw material based on the activity data registered into clip management data. In the example of drawing 26, while edit processing which used clip FC-E and MC-C1 is performed and the clip video data of result clip FC-C is created, as a result, the validity / invalid flag of clip FC-C are changed effectively.

[0271] Next, CPU21 judges again whether the inside of a stack memory is empty in return and here to a step SP 72. In now, since it is not empty, it is obtained a negative result, and it progresses to the following step SP 74. In a step SP 74, CPU21 carries out pop [ of the clip management data ] by one clip from a stack memory, and it judges whether as a result, a clip is effective based on the clip management data. In the example of drawing 2626, although reading appearance of the clip management data of result clip FC-B is carried out, since clip FC-B is invalid as a result, a negative result is obtained and it progresses to the following step SP 75.

[0272] In a step SP 75, CPU21 judges whether as a result, all the low order clips of a clip are validity based on the clip management data read at the previous step SP 74. In the example of drawing 26, since clip FC-D is made into the invalid as a result of being a low order clip, a negative result is obtained and it progresses to a step SP 77.

[0273] In a step SP 77, similarly, as a result, CPU21 pushes the clip management data of a clip to a stack memory again, is invalid in the following step SP 78, and pushes the clip management data of a \*\*\*\*\*

low order clip to a stack memory.

[0274] Next, CPU21 judges again whether the inside of a stack memory is empty in return and here to a step SP 72. In now, since it is not empty, a negative result is obtained, and it progresses to the following step SP 74. In a step SP 74, CPU21 carries out pop [ of the clip management data from a stack memory ] by one clip, and it judges whether as a result, a clip is effective based on the clip management data. In the example of drawing 26, although reading appearance of result clip FC-D is carried out, since clip FC-D is invalid as a result, a negative result is obtained and it progresses to the following step SP 75.

[0275] In a step SP 75, CPU21 judges whether as a result, all the low order clips of a clip are validity based on the clip management data read at the previous step SP 74. In the example of drawing 26, since clip FC-E, FC-F, MC-D1, and MC-D2 which are the low order clip of result clip FC-D are validity altogether, an affirmation result is obtained and it progresses to a step SP 76.

[0276] In a step SP 76, as a result, CPU21 changes effectively the validity / invalid flag of the clip management data to a clip while, creating the clip video data of a clip as a result by performing edit processing using the clip video data of the clip specified as a raw material based on the activity data registered into clip management data. In the example of drawing 26, while edit processing which used clip FC-E, FC-F, MC-D1, and MC-D2 is performed and the clip video data of result clip FC-D is created, as a result, the validity / invalid flag of clip FC-D are changed effectively.

[0277] Next, CPU21 judges again whether the inside of a stack memory is empty in return and here to a step SP 72. In now, since it is not empty, it is obtained a negative result, and it progresses to the following step SP 74. In a step SP 74, CPU21 carries out pop [ of the clip management data ] by one clip from a stack memory, and it judges whether as a result, a clip is effective based on the clip management data. In the example of drawing 2626, although reading appearance of the clip management data of result clip FC-B is carried out, since clip FC-B is invalid as a result, a negative result is obtained and it progresses to the following step SP 75.

[0278] In a step SP 75, CPU21 judges whether as a result, all the low order clips of a clip are validity based on the clip management data read at the previous step SP 74. In the example of drawing 26, since clip FC-C and FC-D are effective as a result of being a low order clip, an affirmation result is obtained and it progresses to the following step SP 76.

[0279] In a step SP 76, as a result, CPU21 changes effectively the validity / invalid flag of the clip management data to a clip while, creating the clip video data of a clip as a result by performing edit processing using the clip video data of the clip specified as a raw material based on the activity data registered into clip management data. In the example of drawing 26, while edit processing which used clip FC-C and FC-D is performed and the clip video data of result clip FC-B is created, as a result, the validity / invalid flag of clip FC-B are changed effectively.

[0280] Next, CPU21 judges again whether the inside of a stack memory is empty in return and here to a step SP 72. In now, since it is not empty, it is obtained a negative result, and it progresses to the following step SP 74. In a step SP 74, CPU21 carries out pop [ of the clip management data ] by one clip from a stack memory, and it judges whether as a result, a clip is effective based on the clip management data. In the example of drawing 26, although reading appearance of the clip management data of result clip FC-A is carried out, since clip FC-A is invalid as a result, a negative result is obtained and it progresses to the following step SP 75.

[0281] In a step SP 75, CPU21 judges whether as a result, all the low order clips of a clip are validity based on the clip management data read at the previous step SP 74. In the example of drawing 26, since clip FC-B is effective as a result of being a low order clip, an affirmation result is obtained and it progresses to the following step SP 76.

[0282] In a step SP 76, as a result, CPU21 changes effectively the validity / invalid flag of the clip management data to a clip while, creating the clip video data of a clip as a result by performing edit processing using the clip video data of the clip specified as a raw material based on the activity data registered into clip management data. In the example of drawing 26, while edit processing which used result clip FC-B is performed and the clip video data of result clip FC-A is created, as a result, the validity / invalid flag of clip FC-A are changed effectively.

[0283] Next, CPU21 is again judged to a step SP 72 in return and the no whose inside of a stack memory is empty here. since reading appearance even of all the clips is carried out by previous pop processing the top result in now -- the inside of a stack memory -- empty -- an intermediary cage and an affirmation result are obtained. Therefore, CPU21 progresses to a step SP 73, and finishes rerun processing.

[0284] In addition, in a step SP 74, when it is judged that the clip of clip management data by which reading appearance was carried out from the stack memory is effective, it returns to a step SP 72. For example, a clip is effective the top result in a clip tree, and to a \*\*\*\*\* case, although clip management data is pushed by the stack memory by processing of a step SP 71, since an affirmation result is obtained by decision of the subsequent step SP 74, way rerun processing is immediately completed from an affirmation result being obtained by the step SP 72 return and here. Thus, the top result, when a clip is effective, rerun processing will be performed substantially.

[0285] What showed typically the content of the flow chart of rerun processing explained above here is shown in drawing 29 . In the edit system 1 by this invention, the top result, clip FC-A is invalid, and it investigates whether at the time of \*\*\*\*\* , as a result of being the low order clip, clip FC-B is effective, is invalid, and investigates whether as a result, low order clip FC-C of clip FC-B is still more effective to a \*\*\*\*\* case. Consequently, result clip FC-C is invalid, it investigates whether as a result, low order clip FC-E of clip FC-C is still more effective in a \*\*\*\*\* case, as a result, clip FC-E is invalid, and it investigates whether as a result, low order clip FC-G of clip FC-E is still more effective to a \*\*\*\*\* case.

[0286] Consequently, if result clip FC-G is effective, as a result, the clip video data of a clip is transmitted, and as a result of being equivalent to a high order clip by rerunning edit processing based on the clip video data, the clip video data of clip FC-E will be created. Creation of the clip video data of result clip FC-E creates the clip video data of clip FC-C, as a result of being equivalent to a high order clip by next rerunning edit processing based on the clip video data. If the clip video data of result clip FC-C is created, it is going to rerun edit processing based on the clip video data next, but as a result of another side which is a low order clip, since clip FC-D is still invalid, it investigates whether as a result of being the low order clip of clip FC-D as a result, clip FC-E is effective.

---

---

DESCRIPTION OF DRAWINGS

---

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the edit structure of a system by this invention.

[Drawing 2] It is the block diagram showing the internal configuration of the workstation which is the main configuration of an edit system.

[Drawing 3] It is approximate line drawing showing each module and clip database which it has in the edit system by this invention.

[Drawing 4] It is approximate line drawing with which explanation of hierarchical management of a clip is presented.

[Drawing 5] It is approximate line drawing with which image explanation of synthetic processing is presented.

[Drawing 6] It is screen image drawing with which explanation of the video image therefore generated by synthetic processing is presented.

[Drawing 7] It is approximate line drawing with which principle explanation of synthetic processing is presented.

[Drawing 8] It is approximate line drawing with which principle explanation of special effect processing is presented.

[Drawing 9] It is approximate line drawing with which principle explanation of edit processing is presented.

[Drawing 10] It is screen image drawing showing the GUI screen displayed when a synthetic module is started.

[Drawing 11] It is screen image drawing showing the GUI screen displayed when a special effect module is started.

[Drawing 12] It is screen image drawing showing the GUI screen displayed when an edit module is started.

[Drawing 13] It is the graph showing the database for clip management data registered into a clip database.

[Drawing 14] It is the graph with which the explanation when correcting the already registered clip management data is presented.

[Drawing 15] It is the graph showing the editing point data at the time of synthetic processing.

[Drawing 16] It is the graph showing the editing point data at the time of special effect processing.

[Drawing 17] It is the graph showing the editing point data at the time of edit processing.

[Drawing 18] It is the graph showing the complex data at the time of synthetic processing.

[Drawing 19] It is the graph showing the special effect data at the time of special effect processing.

[Drawing 20] It is the graph showing the edit data at the time of edit processing.

[Drawing 21] It is the flow chart with which the explanation of operation when starting a control module is presented.

[Drawing 22] It is the flow chart with which the explanation of operation when starting an edit module is presented.

[Drawing 23] It is the flow chart with which the explanation of operation when starting a synthetic module is presented.

[Drawing 24] It is the flow chart with which the explanation of operation when starting a special effect module is presented.

[Drawing 25] It is the flow chart with which the explanation of operation at the time of edit processing is presented.

[Drawing 26] It is approximate line drawing with which the explanation when correcting the content of edit over a clip as a result of arbitration is presented.

[Drawing 27] While starting a predetermined module, it is the flow chart with which the explanation of operation when starting other modules is presented.

[Drawing 28] It is the flow chart with which the explanation of operation at the time of rerun processing is presented.

[Drawing 29] It is approximate line drawing having shown rerun processing typically.

[Description of Notations]

1 [ .. Display, ] .... An edit system, 2 .. A workstation, 2A .. A body, 2B 2C .... A keyboard, 2D .. A mouse, 2E .. Pen tablet, 3 .... A device controller, 4 .. An exclusive controller, 5 .. Video disc recorder, 6 .... A video tape recorder, 7... A switcher, 8 .. Video camera, 9 .... A digital multi-effector, 10 .. A monitor, 11 .. Audio mixer, 20 .... A system bus, 21 .. CPU, 21 A..ROM, 21 A..RAM, 22 .... A video processor, 23 .. A display controller, 24 .. HDD interface, 25 .... A FDD interface, 26 .. Pointing device interface, 27 .... An external interface, 30 .. A menu window, 31 .. Clip tree window, 32 .... A key window, 33 .. A library window, 34, 41, 51 .. Time-line window, 35 .... A parameter setting-out window, 36 .. Preview screen-display window, 37 [ .. 42 An effect selection window, 52 / .. Parameter setting-out window. ] .... A device Control window, 38 .. The content display window of edit, 39 .. 40 A control command window, 50

---

## DRAWINGS

[Drawing 1]

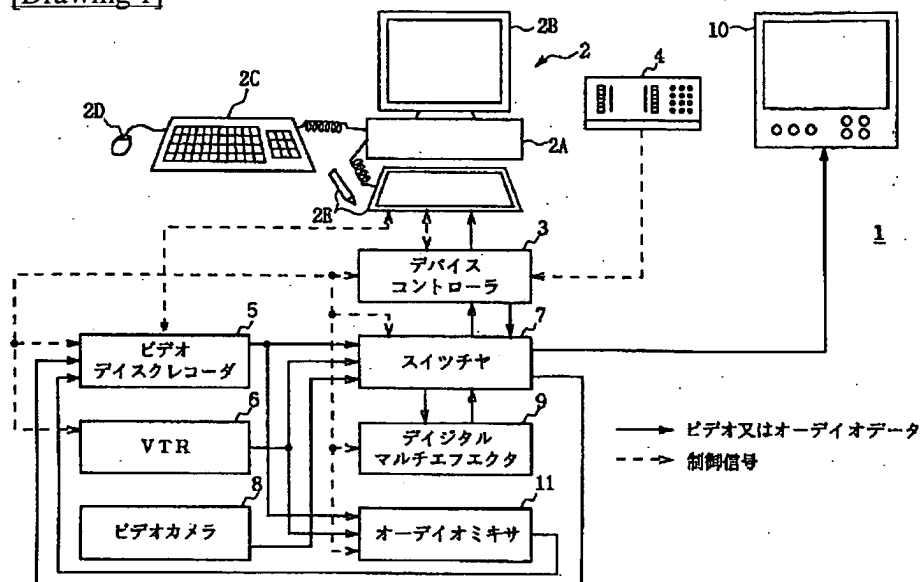


図1 編集システムの全体構成

[Drawing 2]

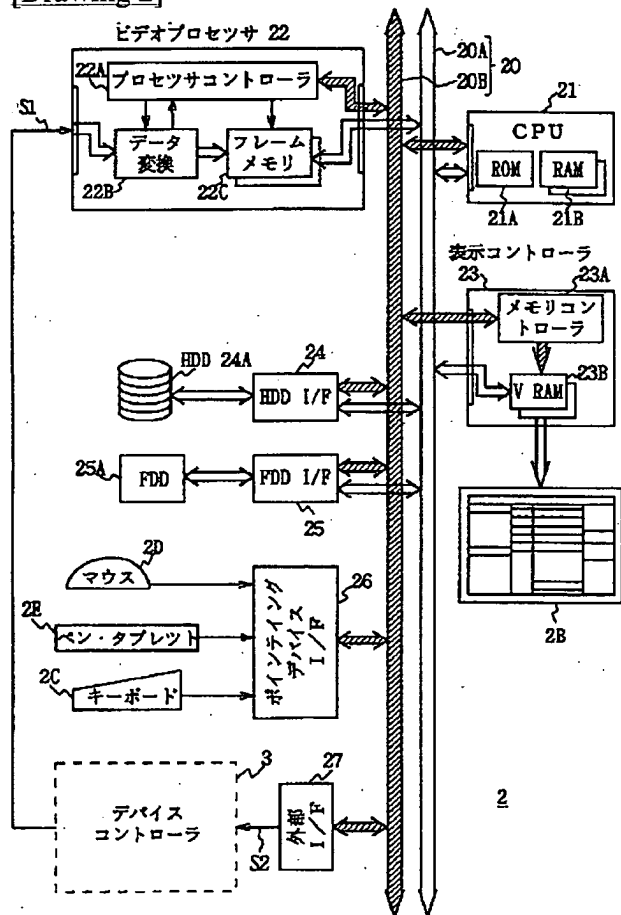


図2 ワークステーションの構成

[Drawing 3]

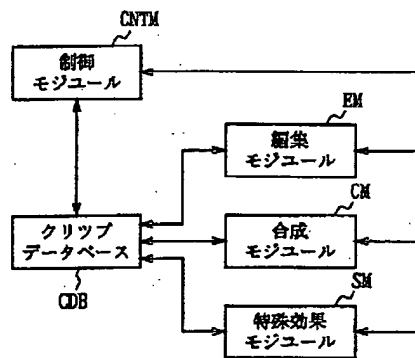


図3 モジュール構成

[Drawing 4]

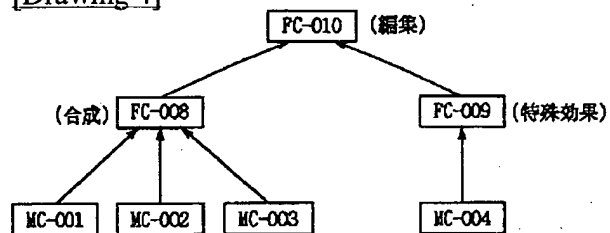


図4 クリップの階層構造

[Drawing 6]

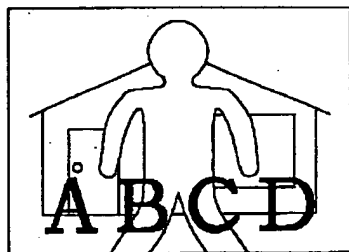


図6 合成ビデオイメージ

[Drawing 5]

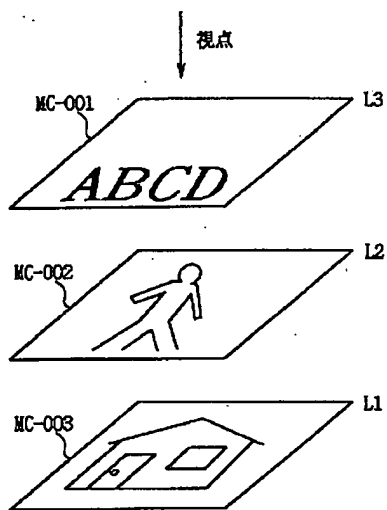


図5 各レイヤに割当てられたビデオイメージ

## [Drawing 7]

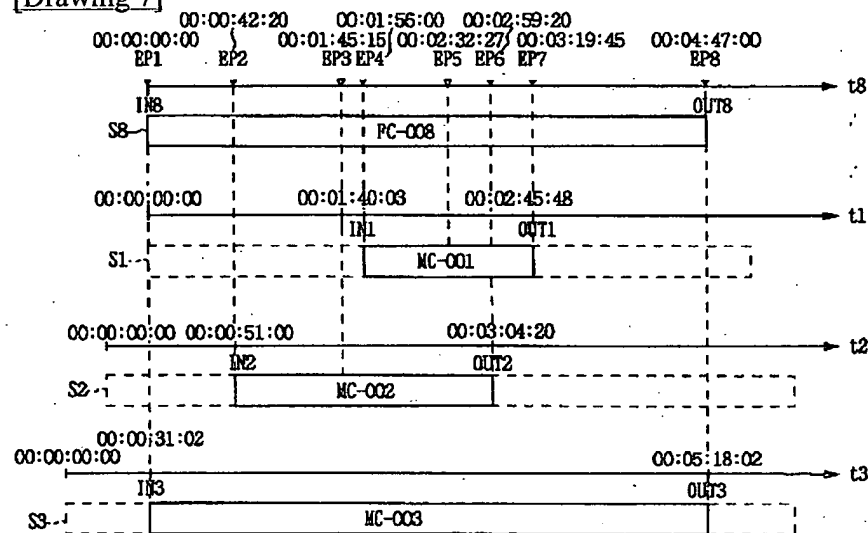


図7 合成処理の原理

## [Drawing 16]

編集点データ									
009	編集点	ID	EP1	EP2	EP3	EP4	EP5	EP6	EP7
	L1	タイムコード	00:00:00:00	00:00:12:08	00:00:51:20	00:01:02:50	00:01:13:41	00:01:40:00	00:02:06:00
		IN	00:10:12:00						
		OUT						00:12:18:00	

図16 特殊効果処理の編集点データ

## [Drawing 8]

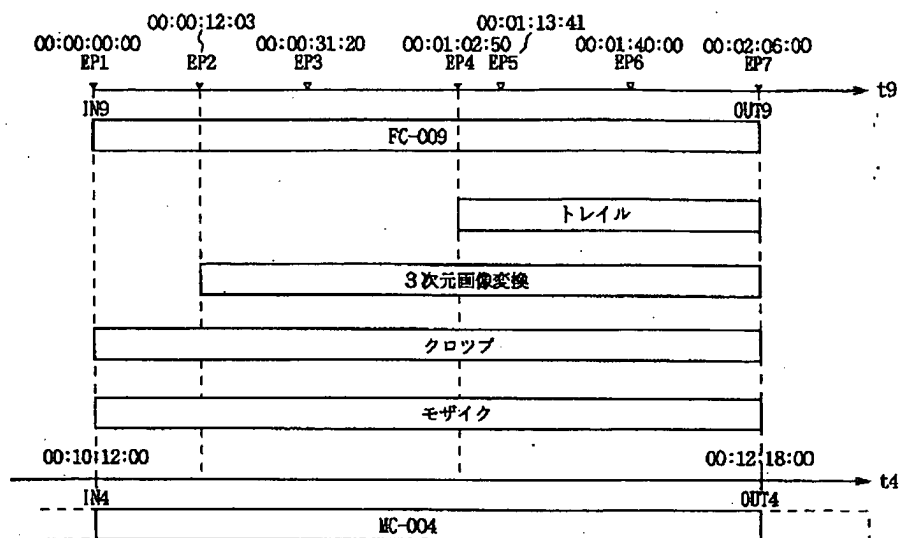


図8 特殊効果処理の原理

## [Drawing 9]

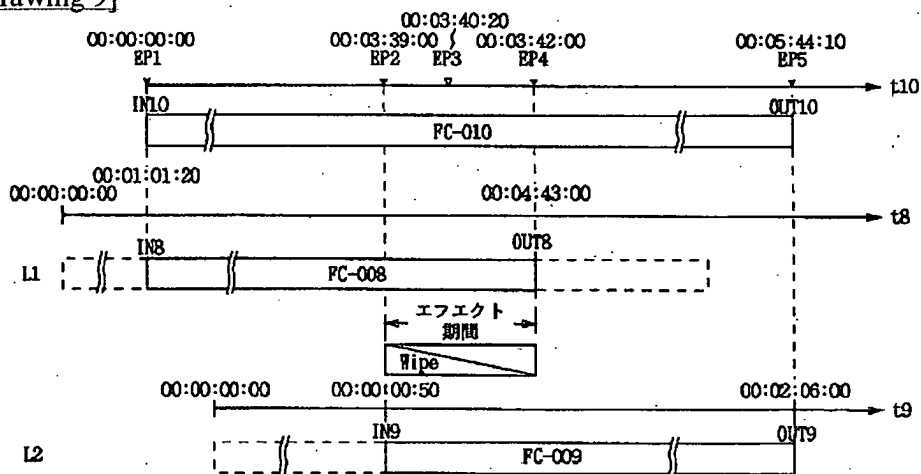


図9 編集処理の原理

## [Drawing 20]

編集データ								
010	エフェクトID	0001						
	編集点 ID	EP1	EP2	EP3	EP4	EP5		
	Aspect		0	--	+25			
	Angle		0	+180	-180			
	Speed		20	20	100			
	H-Mod		0	--	0			
	V-Mod		0	--	0			

図20 編集データ

## [Drawing 10]

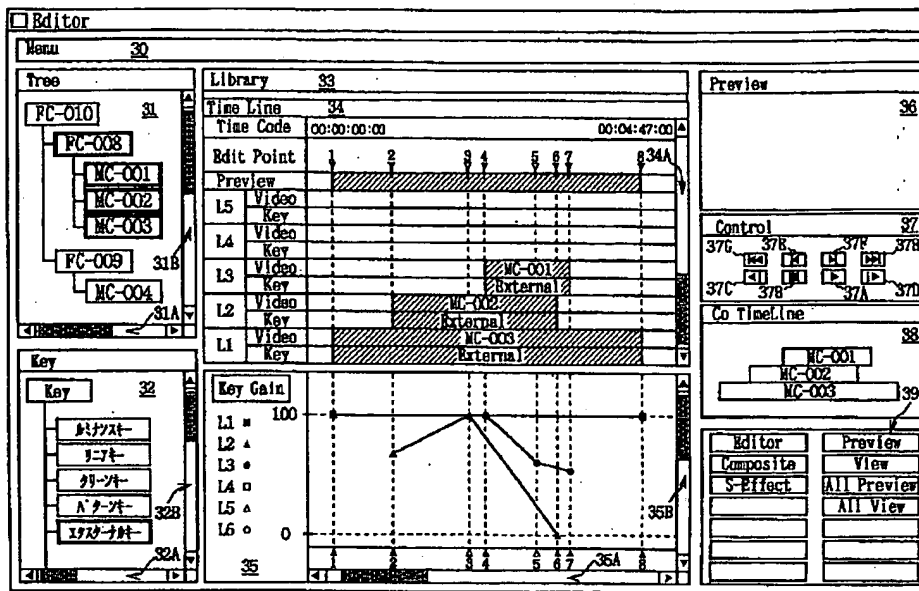


図 10 合成処理に対応したGUI

## [Drawing 11]

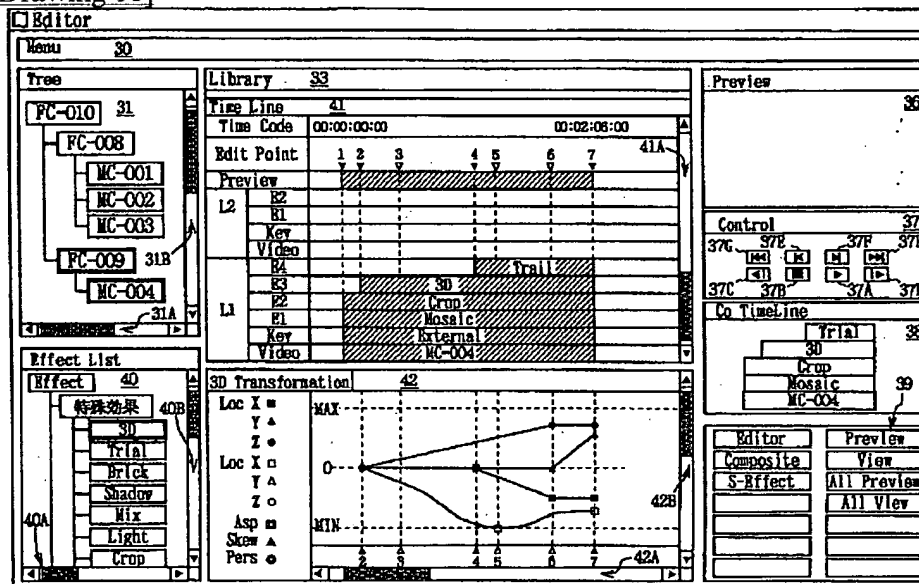


図 11 特殊効果処理に対応したGUI

## [Drawing 12]

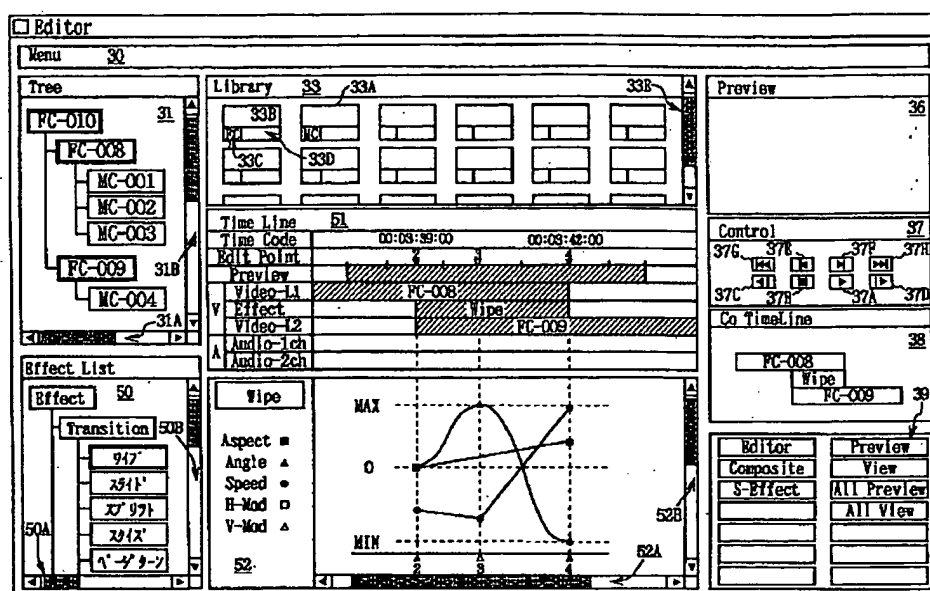


図 12 編集処理に対応したGUI

[Drawing 13]

[illegible]

図13 クリップ管理データ用のデータベース構造

[Drawing 14]

データ IDコード	データ 名称	上位 リンク先 IDコード	下位リンク先IDコード			有効/ 無効 フラグ	作業データ		
			L 1	L 2	L 3		モジュール IDコード	編集点データ	画像処理データ
001	MC-001	008				E			
002	MC-002	008				E			
003	MC-003	008				E			
004	MC-004	009				E			
005	MC-005					D			
006	MC-006					D			
007	MC-007					D			
008	FC-008	010	003	002	001	E	C	編集点データ	合成データ
009	FC-009	010	004			E	S	修正後の編集点データ	修正後の特殊効果データ
010	FC-010	000	008	009		E	E	編集点データ	編集データ
009BK1	FC-009BK1	010	004			D	S	修正前の編集点データ	修正前の特殊効果データ

図14 内容変更が生じたときのデータベース

[Drawing 15]

編集点データ										
008	編集点	ID	EP1	EP2	EP3	EP4	EP5	EP6	EP7	EP8
		タイムコード	00:00:00:00	00:00:43:20	00:01:45:15	00:01:58:00	00:02:32:27	00:02:59:20	00:03:19:45	00:04:47:00
	L 1	IN	00:00:31:02							
		OUT								00:05:18:02
	L 2	IN		00:00:51:00						
		OUT					00:03:04:20			
	L 3	IN				00:01:40:05				
		OUT						00:02:45:48		

図15 合成処理の編集点データ

[Drawing 17]

編集点データ										
010	編集点	ID	EP1	EP2	EP3	EP4	EP5			
		タイムコード	00:00:00:00	00:05:39:00	00:03:40:20	00:03:42:00	00:05:44:10			
	L 1	IN	00:01:01:20							
		OUT				00:04:43:00				
	L 2	IN		00:00:00:50						
		OUT					00:02:06:00			

図17 編集処理の編集点データ

[Drawing 18]

合成データ									
008	編集点 ID	EP1	EP2	EP3	EP4	EP5	EP6	EP7	EP8
	L1合成ゲイン	100	--	--	--	--	--	--	100
	L2合成ゲイン		59	100	--	--	0		
	L3合成ゲイン				100	67	--	51	

図18 合成データ

[Drawing 19]

特殊効果データ									
009	L1	E1							
		E2							
		マテリアルID	1025						
		編集点ID	EP1	EP2	EP3	EP4	EP5	EP6	EP7
		Loc X		0	--	0	--	-1.6	-1.6
		Loc Y		0	--	--	--	0	+2.0
		Loc Z		0	--	--	--	+2.2	+2.2
		Rot X		0	--	--	-180	--	-102
		Rot Y		0	--	--	--	--	0
		Rot Z		0	--	--	--	--	0
		Asp		0	--	--	--	--	0
		Skew		0	--	--	--	--	0
		Pers		0	--	--	--	--	0
		E4							

図19 特殊効果データ

[Drawing 22]

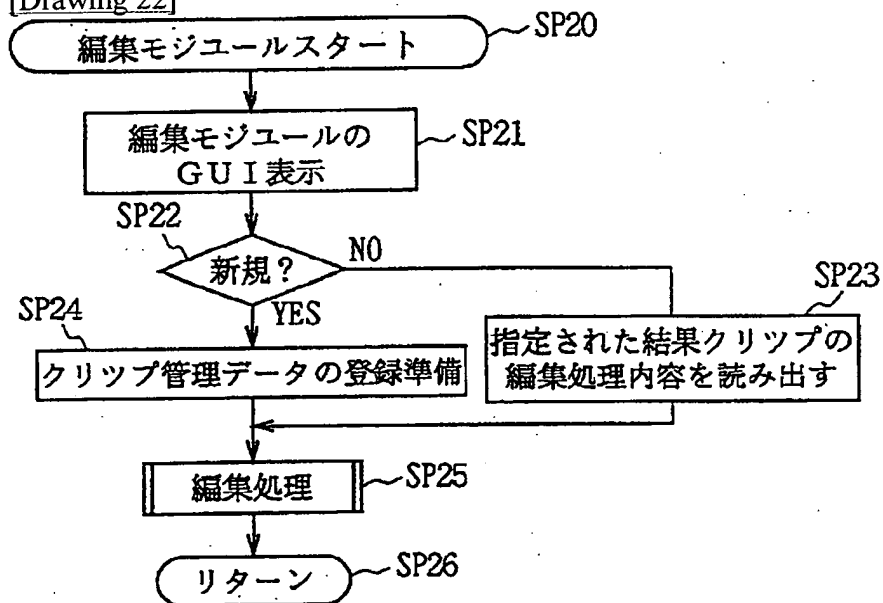


図22 編集モジュール起動

[Drawing 21]

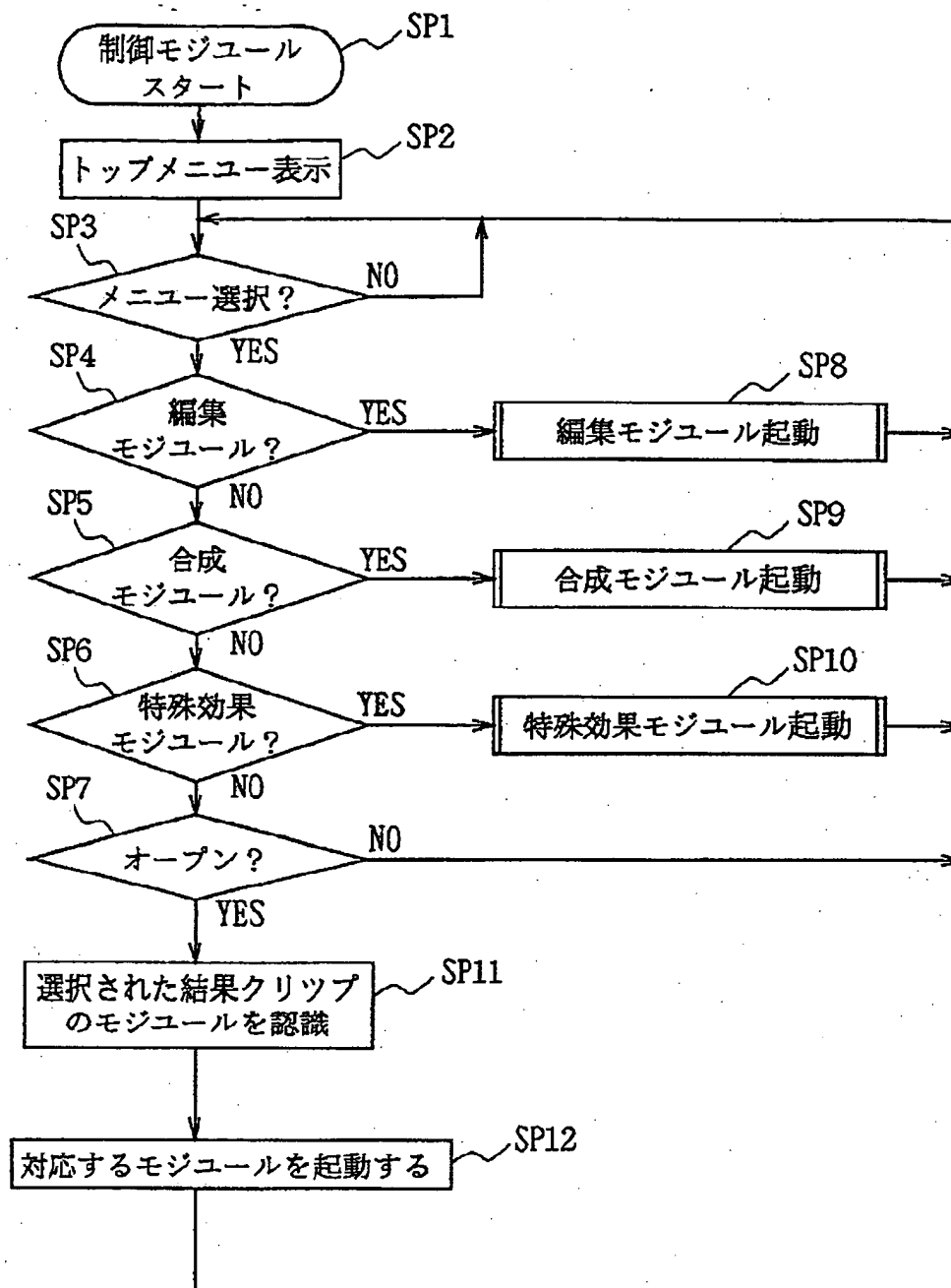


図 2 1 初期動作

[Drawing 23]

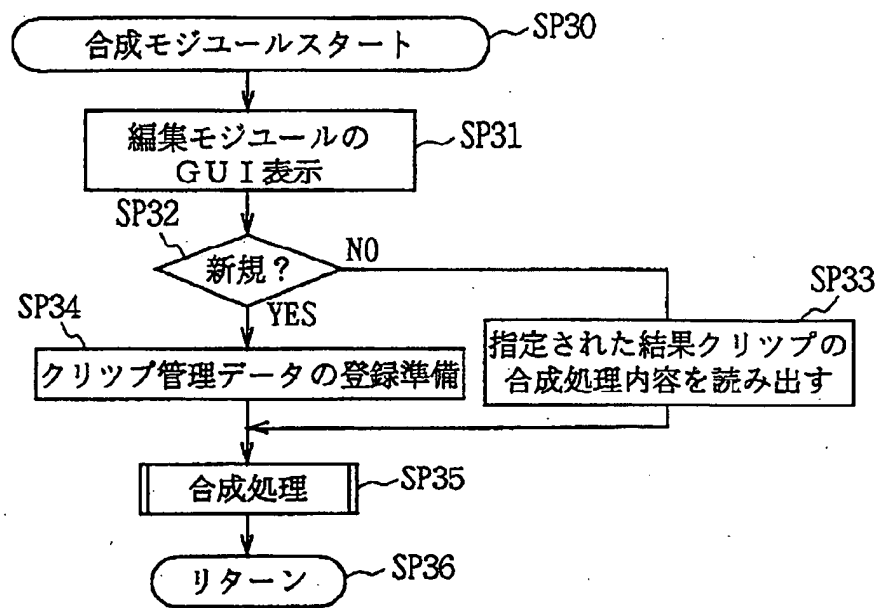


図23 合成モジュール起動

[Drawing 26]

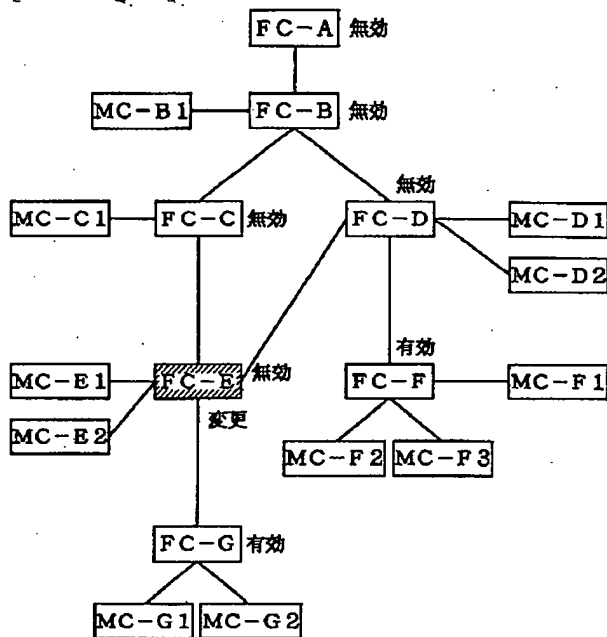


図26 クリップの階層構造

[Drawing 29]

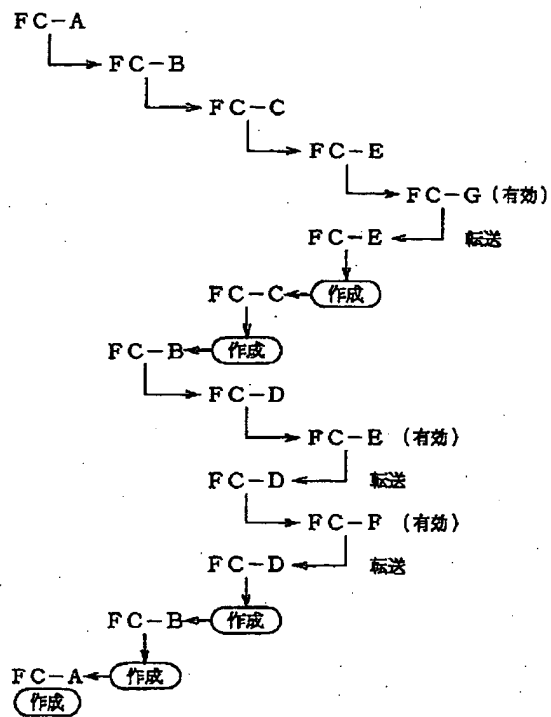


図29 再実行時の動作例

[Drawing 24]

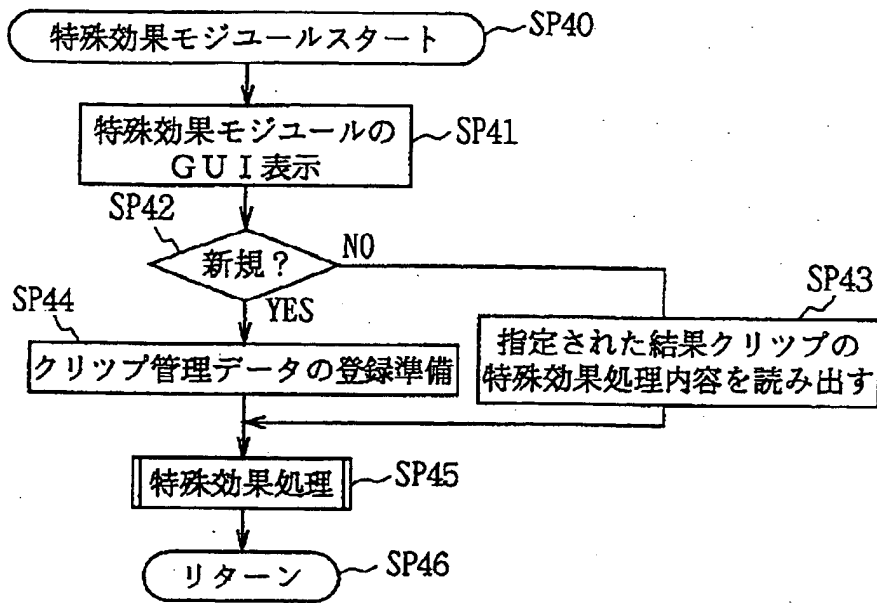


図24 特殊効果モジュール起動

[Drawing 25]

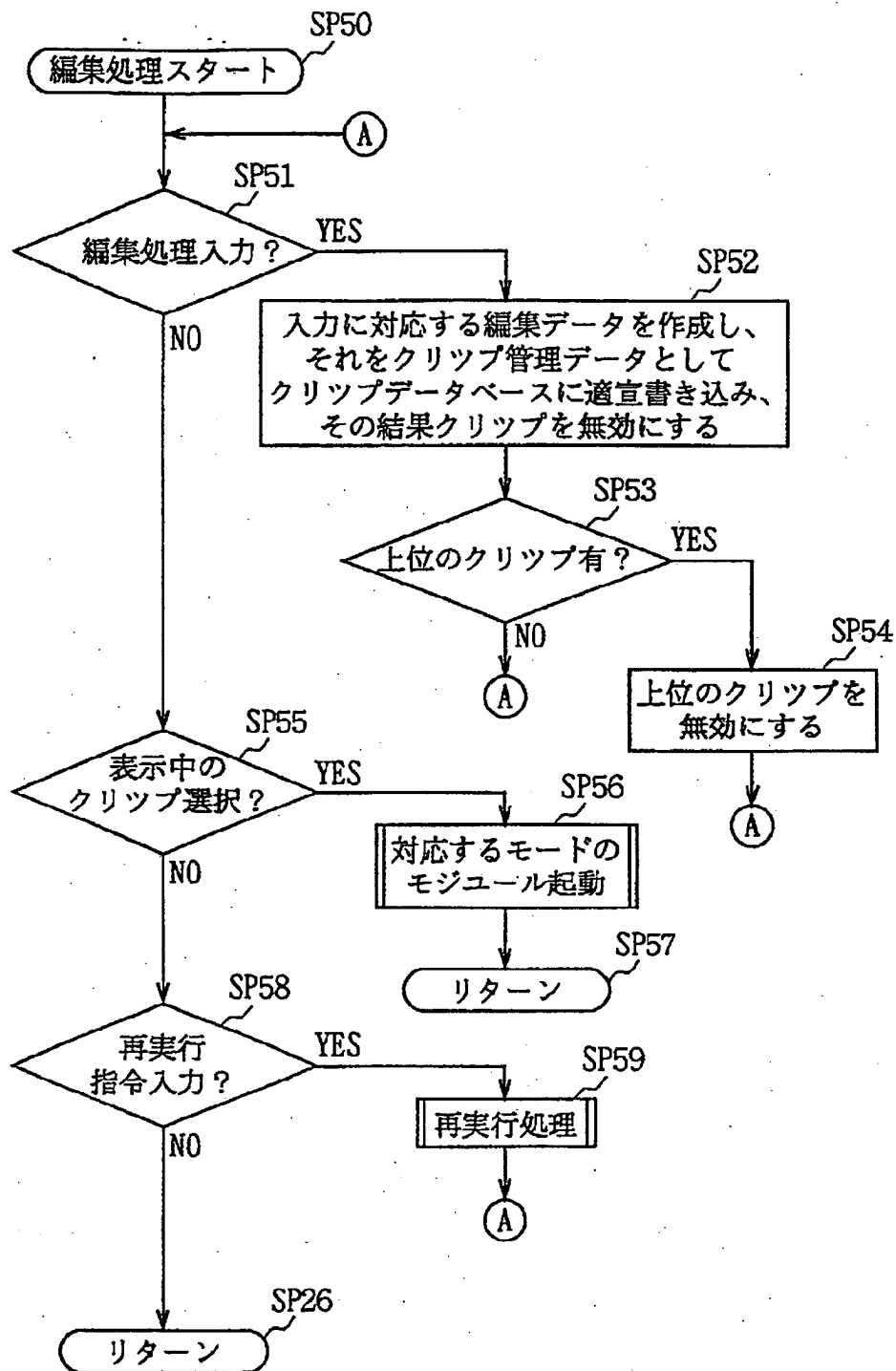


図 25 編集処理時の動作

[Drawing 27]

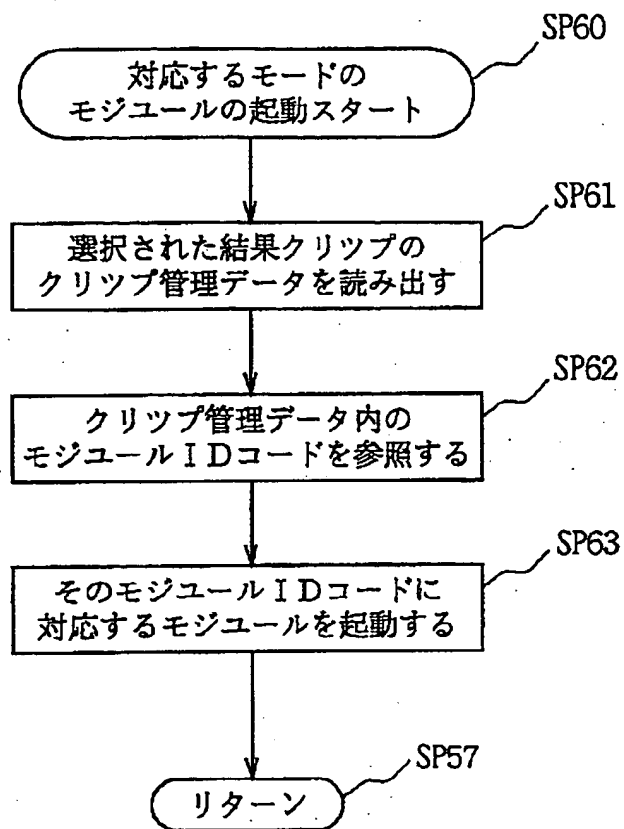


図27 対応するモジュールの起動

[Drawing 28]

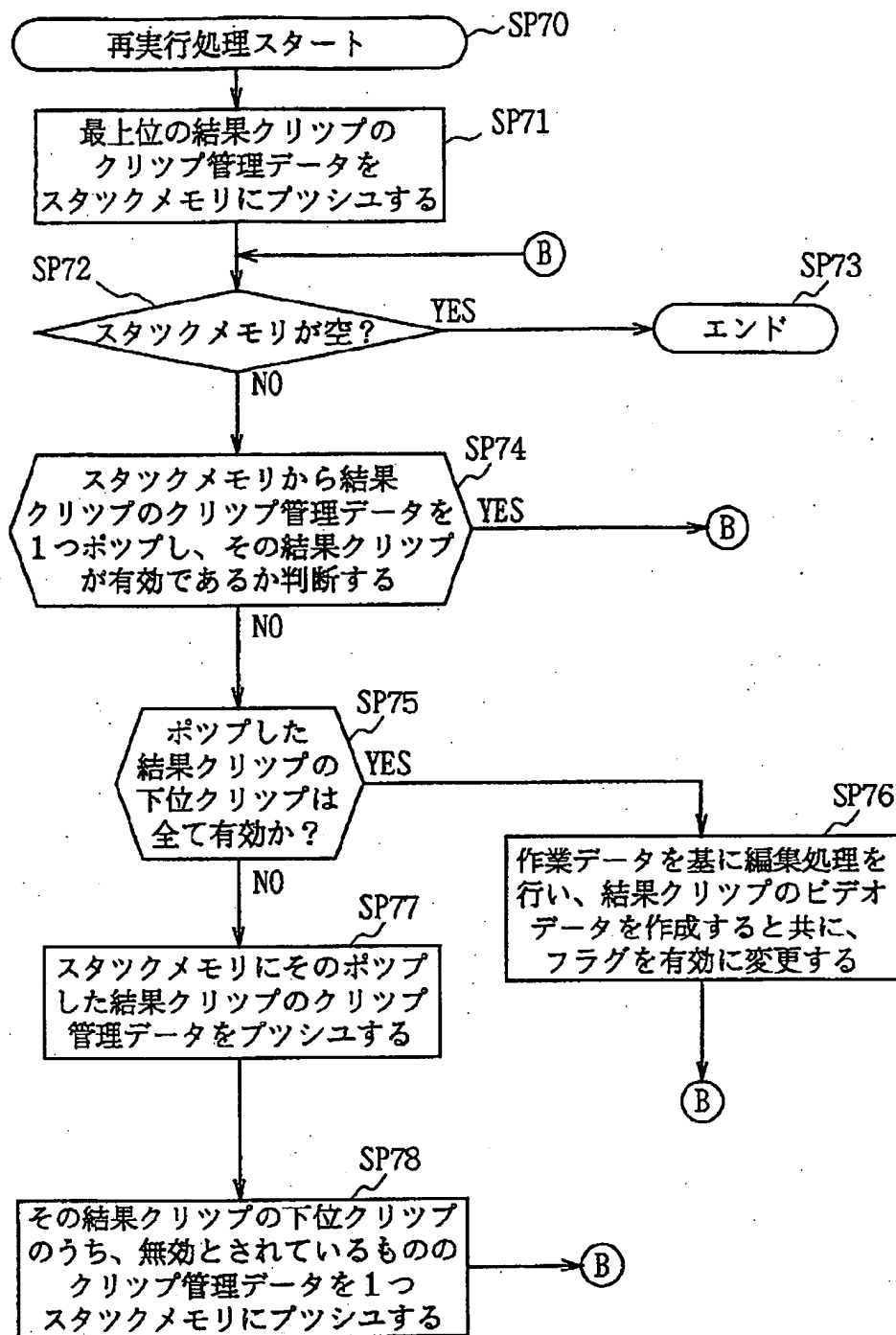


図28 再実行処理

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☐ FADED TEXT OR DRAWING
- ☐ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☒ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☐ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**